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ABSTRACTS ON THE PROBLEMS AND SCIENCE OF HUMAN SETTLEMENTS

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Cover Illustration: Master plan for the Korangi area near Karachi, Pakistan; see pp. 207–235.

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E K I S T I C S

ABSTRACTS

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CLARIFICATION: In the May, 1959 issue of Ekistics (p. 369, para. 7) we attributed to Mr. Vernon Z. Newcomb the comment that the "development" of a new town at Kuala Lumpur, Malaya had been "initiated" by the Federal Housing Trust. One interested correspondent fears that this statement ascribes too great a role to the Trust, since other builders had been active before 1954, when the Trust came in as a builder only. Perhaps therefore the reader should be cautioned to understand "stimulated" for "initiated" and to interpret "development" in the sense of construction activity rather than of intellectual conception.

EDITORIAL

It is a pleasure to the editors of EKISTICS to report on a survey of its readers which indicated the usefulness of EKISTICS to practioners and theoreticians involved with the development of settlements and their hinterlands. The unique quality of EKISTICS is that it endeavors to set forth constants in the problems and the science of establishing human settlements throughout the entire world. To do this it abstracts articles and case studies from a number of countries. One area of the world which has been inadequately covered, to date, is the U.S.S.R. and the block of Eastern European and Asiatic countries which fall within the communist political and economic group of nations.

In May, 1959, one paper from the Fifth Congress of the International Union of Architects held in Moscow, July, 1958 - Town planning in Communist China, North Korea and Japan - came into the hands of the editors of EKISTICS, and a fairly lengthy abstract of it was published. Now, the complete report of the Congress has been received, and therefore this month, lengthy abstracts are issued on planning in Russia and the countries of eastern Europe. Unfortunately, only rather poor photographs were available with the text. More illustrative material would certainly have made these reports more concrete and valuable.

Quantitative town planning. The paper presented by V. Chkvarikov on "Town Planning in Russia and the Eastern European Peoples Democracies" is impressive in its quantitative list of the town-planning projects undertaken and completed since the end of the war. An abstract quantifying of planning projects seems to persist throughout their different areas: eg. an apparently uniform distribution of population throughout all districts (including Siberia and the desert areas) with little consideration of its liveability, or the setting of specific popu- maximums for various towns or districts.

There is an apparent absence of qualitative thinking, or consideration of the living conditions of the individual (a necessity in the study of the science of EKISTICS) among the planners of the Soviet bloc, especially those of the U.S.S.R. It would appear that some planners and architects, especially in Poland and Czechoslovakia, are in rebellion against too rigid, government imposed, schemes of site-planning as well as in conflict with one another on the thorny problem of expressing respect for the structures of an ancient culture and not denying the quality and character of contemporary architecture.

Authoritarian Planning. In the summary on the "Effectuation of Plans" it is made clear that within the Soviet bloc, planning legislation means imposed authority from the top. Luben Tonev, rapporteur of this section at the Congress, clearly states that the solution of planning problems can be found by creating more and more power from the top: the compulsory coordination of town plans with

national development plans, with the Chief Town Architect all powerful at the Town level, but receiving his instructions from outside the locale.

This same superimposition of hierarchical authority carries over into the construction industry. The summary paper dealing with the industrialization of the building industry within the Soviet Bloc ("Construction in the U.S.S.R.") describes much the same situation as the central theme of Vladimir Dudintsev's best selling novel (both outside Russia and inside Russia, until it was suppressed there): Not by Bread Alone. The novel deals with the inventor of a new kind of pipe making machine. This inventor cannot get his superior machine accepted because it would not look good for the work of the government scientists to be out-moded by the invention of an independent technician.

The paper at the Congress presents the government controlled construction industry producing standardized housing units. The concern throughout is for cheap housing in quantity and no discussion arises about the expressed desires of the people themselves or any consideration of variations in the way of living other than by the use of different building materials. As the rapporteur himself summarizes his report, building of new residential districts will be like making moves on a chess board -- and the human factor is reduced to a pawn.

China in Focus. Leo Orleans presents a well-documented critique of recent population movement reports published in China which does not entirely fit in with the picture painted in the other reports.

Ekistics in Practice: The Korangi district of Pakistan. This issue concludes with a case-study of program for the development of an area near Karachi, capital city of Pakistan. Doxiadis Associates are now engaged in implementing the project described. While considerations of efficiency and economy are certainly not omitted in any part of this program (abstracted from a series of reports presented to the government of Pakistan) there is also an emphasis on the human factor: the varied social life and well-being of a population of (eventually) some 100,000.

EKISTICS is compiled by Mrs. Gwen Bell under the direction of Prof. J. Tyrwhitt.

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NOTE: The figures below each title refer to the Universal Decimal Classification.

THE READERSHIP OF EKISTICS

1. Since EKISTICS began, about five years ago, it has continually grown, both in readership and in material. Last October, the first formal survey of the readers of EKISTICS was conducted. Due to its very far-flung readership, the editors have been receiving this material over the last seven months, and only now consider that it is now complete enough for summary.

2. The purpose of the survey was to discover the usefulness and interest that EKISTICS held for those receiving it. Secondly, it was to stimulate suggestions and contributions from the readers. As EKISTICS caters to theoreticians and practitioners interested in the development of settlements throughout the world, it is based on the theory that there are common elements and problems which are worldwide. Thus, to an extent, publication in EKISTICS allows for communication between its readers.

3. Who reads EKISTICS. One of the largest groups to receive EKISTICS are educational institutions. At these institutions (Schools of town planning, architecture, and associated subjects), the material is available both to teachers and to students of Ekistics. Perhaps even more importantly in this field EKISTICS is received by many research agencies which are constantly working to test and develop new techniques and materials and analyze existing trends and forms.

4. Technicians and administrators of the United Nation's various organizations which deal with development programmes form a substantial proportion of the readership. The technical staff of a number of other organizations interested in the science of ekistics (for instance, the Pan American Union) also form part of the readership.

5. However, the readers who find most of interest in EKISTICS are the practitioners specifically dealing with development in one specific place. They are faced with practical problems everyday, and for them, EKISTICS summarises new theoretical formulations and case studies which can sometimes give a new perspective to their provincial problems.

6. Worldwide Distribution of EKISTICS. In providing an international focus on the development of human settlements, EKISTICS is received monthly in every continent (Except Antartical). In the "developed areas" of the world (North America and Europe) it is received mainly by educational and research institutions. Most of the practioners who receive EKISTICS are found in such places as Georgetown, Demerara; Djakarta, Damascus, Accra, etc.

Readership of EKISTICS --2

7. Usefulness of EKISTICS. Over 90 percent of those who answered the questionnaires said that EKISTICS was of use to them personally. To attest to this usefulness, forty percentof those answering the questionnaire recommended other people to whom EKISTICS would also be useful. In all practicable cases these suggestions have been heeded.

8. Contributions by Readers. It is noteworthy, that fifty percent of the people answering the questionnaire had at one time or another sent in articles for use in abstracted form in EKISTICS. Of this fifty percent, half of the articles which they hadsentin, had been published in EKISTICS. This contribution by the readers is necessary for the continual publication of this periodical whose contents consists of abstracts.

9. The quality of EKISTICS can only be as good, and as useful, as the material which is sent to the editors for publication. Thus, it is extremely important that the readers continue to cooperate by sending papers which they have written on their specific problems and locale.

10. Reader Interest. The questionnaire asked the reader to record useful and useless articles. We hope that the fact that no useless articles were listed, indicates that all the material published is, at least tosome extent, useful. The articles most useful and interesting to the readers included a specific town case-study, the report of a locust attack in the Near East, and an article on modular coordination. We have been trying to follow the lead of these suggestions in publishing other articles in these fields.

11. It appeared that the reports of projects prepared by Doxiadis Associates were also of noteworthy interest. EKISTICS continues to present these reports in detail as examples of the application of the science of ekistics. In the first half of this year, in supplement to the practical examples of ekistic methods as applied by Doxiadis Associates, we have featured a series of lectures given by Dr. C.A. Doxiadis at the Massachusetts Institute of Technology on "Architecture, Planning and Ekistics."

12. Other articles which seemed to be of special interest were those which presented specific new town plans, housing topics and demographic studies. Suggestions were also made for inclusion of articles in the future. It was indicated, that more graphic material would be helpful. In the last several years it has been the policy of EKISTICS to use well-illustrated material whenever possible. Unfortunately, some good papers we receive are not well illustrated and a few have no illustrations at all (for instance, the reports from the Fifth Congress of the International Union of Architects published in this issue.)

Readership of EKISTICS ---3

13. Articles having to do with the financing, and economic aspects of ekistics, have been suggested by readers. This type of article is difficult to find. Financing in under-developed countries is one of the greatest problems of their development -- one reason for this is that it is a frontier area in which basic research is necessary. Details of specific planning schemes and community developments were also suggested. During the first six months of 1959, abstracts were published on the plan for new towns in Canada, Roukela (India), Tapiola (Finland), Vällingby (Sweden), Nejef, Kufa, and Amara (Iraq).

14. Various comment which were made on the questionnaires may give some insight into the reaction to EKISTICS by readers:

> "The copy sent me, after reading has been passed on to several members of the Thailand, UNESCO Fundamental Education Centre. Our architect has found it especially stimulating and has used some ideas in village planning."
>
> " EKISTICS is of value to this authority, as it provides information on housing problems elsewhere in the world, and an indication of how they are being handled."
>
> "I am impressed by the high standard of editing and production."
>
> "EKISTICS is too limited in emphasis on such design items basic to environment, as landscape."
>
> "It is a most welcome addition to our library. Your abstracts are concise, you summarize material extremely well. The inclusion of maps, photographs, and plans add to the usefulness of the abstracts."
>
> "Some articles have been useful for teaching and research purposes."

15. In recent years both the magazine EKISTICS and the science of ekistics has been expanding. The role of the science of Ekistics is summed up excellently in a paper by M.G. Ionides on "Objects and implications of Economic Development."

> "Programmes of economic development and of foreign technical aid can provide a stimulus if they are specifically designed to do so. To use a word which is coming into use, the starting point for this side of development is ekistics rather than economics. They both derive from the same Greek root but the ekistic approach starts in the man's home and his surroundings, and seeks to stimulate and guide a combined development of

man's skill and of his physical surroundings through his own initiative, whereas economics starts with the material resources of a country and seeks economically profitable ways of exploiting them. This is an extension of the original meaning of the science of ekistics, but I am describing an approach rather than defining the term. Both approaches are necessary. Indeed, they interlock and reinforce one another. Economic developmenthas ekistic effects; ekistic development has economic effects, direct as well as indirect. The ekistic science concerns man in relation to his environment and economics.

"Having now referred to the ekistic science, I can all the easier conclude by defining the scope of my subject in more precise terms. I have pointed attention to the necessity of doing more to stimulate the subsistence economy, as well as promoting the development in the modernised centres where the cash economy and its institutions are in full swing. I have approached this problem from the ekistic angle, and have concentrated on that part of the science which concerns the means of presenting a stimulus to the people."

Chkvarikov, Viatcheslav.

TOWN PLANNING IN RUSSIA, POLAND, HUNGARY, BULGARIA, CZECHOSLOVAKIA, RUMANIA, AND THE GERMAN DEMOCRATIC REPUBLIC.

International Union of Architects, Fifth Congress, Moscow, July, 1958. Theme I, "Plan: its functional and aesthetic aspects." Congress Papers, Moscow, 1958.

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1. The contemporary problems of town planning throughout the world focus on many of the same factors; housing, urban sprawl, traffic congestion, with the potentials (and pit-falls) arising from advancing technology. While many of the problems are the same, solutions and the methods toward solutions differ greatly. In the May, 1959 EKISTICS we presented a survey of town planning in the People's Republic of China, North Korea, Japan, presented as a parallel paper at this same conference. The planning techniques and problems of these countries, operating with much the same theoretical background, presents still another contemporary method of handling town planning. Viatcheslav Chkvarikov, Correspondent Member of the Architecture Academy of the USSR, and Director of the Institute for Town Building and Regional Planning, served as rapporteur in the preparation of this summary paper.

2. The problem of working out development plans for towns is first and foremost a problem of rationally distributing industry and population, a scientific long-term provision for the formation of towns. In other words, it is a restriction of industrial construction and the growth of population in the big towns, which already have a developed industry; it is a rational distribution of industrial enterprises in small towns as well as creation of new industrial centres in places with their own sources of raw materials and fuel and with favourable transportation facilities.

3. In spite of certain difference in the tasks pursued by the project in all socialist countries the principles on which it is based is the same.

4. But these principles cannot take the form of a "scheme for an ideal town". However good a scheme may be from the viewpoint of its functional, aesthetic, and other aspects, it cannot be regarded as satisfactory if it is not feasible under actual conditions, nor if it does not meet the social-economic or technical possibilities and requirements of the society in the period for which it is intended.

5. There have been cases when the redevelopment plans or plans for building new towns have turned out to be impracticable. In the initial period after the war, some Soviet architects, including Moscow architects, were carried away by the ostentatious side of architecture and town planning. In conditions, where there

were practical tasks of construction on a mass scale, they planned huge, pompous ensembles of squares and streets, the building of which required the simultaneous pulling down of entire blocks and districts and the investment of huge sums of money in order to carry out falsely interpreted aesthetic principles.

6. Plans out of touch with reality, modern technical possibilities and requirements became in effect, an impediment to the development of mass housing construction.

7. The approach to the problem of a plan's practicability cannot be a simple one. Here one contends with a whole series of factors of which the period and the conditions under which the plan can be carried out are most important.

8. It is the practicability of a town plan which consecutively determines its schedule and the order in which it is implemented. Correct combination of long-term plans with programs for the initial period is a necessary condition determining the practicability of any plan whether for a new town (Angarsk, Rustavi and Volzhsk in the USSR., Nowa Huta in Poland, Stalirvaros in Hungary, Havior and Stalinstadt in the German Democratic Republic, and other towns) or for the redevelopment of an old town (Prague and Moscow, for example.) Moscow is being rebuilt in accordance with a master plan adopted in 1936. This provides the solution for the major fundamental problems and embraces a long period. The plan is developed by ten-year, five-year, and one-year periods. The one-year plans cover a concrete program for construction in the given period, indicating sites and organization. They also contain a program providing for the laying and extension of roads and pulling down of structures which hinder the normal functioning and development of the town.

9. In socialist countries* where the building of towns is part of national economic plans envisaging the consecutive development of the economy and culture of these countries, no big town planning scheme requiring a long period for its realization can be regarded as dogma. It serves as a guide and may be amended to meet the problems of several periods. Nevertheless, it retains its importance as a fundamental regulating document and is necessary, firstly as a guide for detailed planning and, secondly, as a guide for local bodies and functionaries carrying out the project.

10. Comprehensive development plans for the reconstruction and rebuilding of old towns and building new towns have been made for Moscow and Leningrad, Prague and Bratislava, Warsaw and Gdansk, Budapest, Sofia, Berlin, Kiev and Minsk, Baku Tashkent, Yerevan, Tbilisi, Riga and many other towns.

*and not only in socialist countries (ed.)

11. REGIONAL PLANNING AND DISTRIBUTION OF POPULATION. Study of the documentation prepared by the sections of the International Union of Architects shows that in the town planning practice of socialist countries the greatest attention is devoted to achieving the speediest possible expansion of productive forces and their even distribution and to bringing industry closer to sources of raw materials and to consumers. That is one of the basic principles of the general economic and cultural development of the socialist countries and is a necessary condition for developing regions economically backward in the past. Therefore it is considered that in present-day conditions big construction projects cannot be started unless there is a scientifically-substantiated scheme of regional planning.

12. A correct distribution of inter-related construction units, the expedient utilization of the territory, the setting up of transport and engineering communications, and buildings for groups of enterprises, can only be ensured on the basis of plans which take full account of the interests of the entire district.

13. Poland: The planning of communities in regions where groups of industrial enterprises are operating or are planned on the basis of utilization of natural or power resources takes account of all the construction that is being done in the region and is linked up with the regional planning. Noteworthy in this respect is the experience of our Polish colleagues. The comprehensive development plan of the Cracow Region is interesting as an experiment in the radical reorganization of the economy of a large territory in connection with the building there of a powerful iron and steel works and the town of Nowa Huta. In the plan for Lodz Region, major importance is attached to the problem of industrial decentralization and of deconcentrating the population brought about by long years of concentration in this district containing almost the whole of the country's textile industry.

14. Rumania: In coal, oil and mining districts, where enterprises are scattered over a large area, great importance is attached to the question of settling people. One of the most important projects in the Rumanian People's Republic is the scheme for the Jiu Valley coal-basin. This scheme is linked with the entire system of existing or planned underground mine workings.

15. Czechoslovakia: Of tremendous practical importance was the carrying out in Czechoslovakia of planning schemes both for coal and industrial districts in the country. Major projects in recent years were the redevelopment plans for the coal and industrial districts of Ostrawa, Usti-Most and Vltava-Elbe district as well as the Pardubice-Gradec industrial district, which adjoins Prague in the North.

16. Recreation: The distribution of sea-side construction, the problems of mineral sources conservation, the utilization of beaches, the laying out of park zones and outlying agricultural bases, as well as the distribution of the industry servicing resorts - power stations, transport facilities, and so forth - cannot be solved for the individual site. Each requires a complex solution with account of the interests of the entire district. In this respect, great importance attaches to regional planning schemes such as the Crimean coast carried out in the USSR, the High Tatra spa area in Czechoslovakia, the Black Sea district in Rumania.

17. Agriculture: In addition to the building of new groups of industrial enterprises and towns, a fundamental reorganization of farming territory is planned on the basis of the work that has been done under the regional plans for the district of slate deposits in Estonia, for the Irkutsk-Cheremkhov industrial district, the zone of the confluence of the Kuibyshev and Stalingrad hydropower developments, and the Bugulma and Tuimasy oil district.

18. Industrial concentration: Reorganisation of the management of industry and construction in the USSR on the basis of an economic division into districts, with the transfer of the seat of the management of the national economy to the localities, is making for a more profound study of the districts and a better distribution of towns, and is removing departmental hindrances, which sometimes lead to grave errors and increased expenditure for industrial and civic construction. Such mistakes were, in particular, an excessive concentration of different enterprises in the towns of the Kuznetsk coal basin, the distribution of enterprises and residential districts in coal-bearing territories, the unsystematic development of transport lines and so forth.

19. Size of towns: The post war experience of complex regional planning shows convincingly that a master plan for a town cannot be properly drawn up if no account is taken of the suburban district around it. This is especially true of big industrial towns where the suburban zone extends far beyond the town limits.

20. Soviet architects have come to the conclusion that it would be inexpedient to continue distributing big, non-urban industrial enterprises and warehouses or to enlarge operating enterprises in towns with a population of more than 250,000 plus their suburban zones, taking the size of these zones as: for towns with a population of 250,000 and over, a radius of 20-30 kilometers (approx. 12 - 19 miles); for Moscow and Leningrad, a radius of not less than 50 kilometers (approx. 31 miles).

21. In the USSR, the unrestricted growth of big towns has been recognized as inexpedient. A decision to forbid further industrial construction in Moscow, Leningrad, Kharkow, Rostov-on-Don, Sverdlovsk, Novosibirsk, Gorky and other big towns was adopted already prior to the war. After the war, this decision was extended to all towns with a population of over half a million.

22. Similar restrictions have been imposed in other socialist countries as well. True, the number of especially big towns is comparatively small in these countries and the restrictions, in effect, concern only the capitals. Thus, the problem of restricting the growth and decongestion of big towns is most urgent in the USSR.

23. One of the possible methods of decongesting big towns is the distribution of enterprises in small and medium towns which have favourable conditions for the development of industry. In the USSR, there are about 1,300 small towns with a population of up to 50,000. Among these there are many where it is quite possible and expedient to build new enterprises, a factor that would contribute towards the outflow of people from the big towns.

24. This problem can also be solved by the building of satellite towns around the big towns. These satellite towns would, to a certain extent, be dependent on the big towns both as regards production links and the servicing of the population by certain cultural establishments. This gives rise not to a single territorial complex, but to a group of contiguous, inter-related towns in which the big town plays the role of an administrative and cultural centre.

25. It may be asserted that small satellite towns with a population of about 30,000-50,000 but not more than 80,000 have all the requisites for the creation of the healthiest living conditions. This size cogs in well with the size of most industrial enterprises.

26. As regards construction and exploitation expenses, a town with a population of 30,000-80,000 is the most economical because it does not stand in need of expensive urban passenger transport, big municipal structures and so forth.

27. New Towns: New industrial districts have begun to spring up where local mineral wealth can be utilized - in the tundras of the North, in the deserts of Central Asia, in the taiga forests of Siberia, and in the Far East. New towns are being built close to emerging factories and mines, in formerly uninhabited areas. In the USSR 564 new towns and 1,069 settlements were built in the period from 1926 to 1957.

28. In conformity with the policy adopted in the Soviet Union of uniformly distributing the productive forces, these new towns sprang up chiefly in regions with an underdeveloped industry and a small population: Eastern and Western Siberia, the Far East, the European North, Central Asia, and Kazakstan. This ensured an extremely rapid economic and cultural development and the drawing of industry closer to sources of raw materials and consumers.

29. A scheme for the distribution of industry and communities is being worked out for each economic area where large-scale building of industrial enterprises and towns is planned. Not only will this scheme make it possible to define the fundamental building of a system of towns but it will also show the main sub-regions and units ensuring the complex solution of the problem of distributing all forms of construction.

30. At present, the choice of sites for new towns hinges on a solution of the general problem of distribution of population in the corresponding areas. It is recommended that the size of a new town should be determined on the basis of the following requisites:

a. the best hygienic conditions of residence;

b. closeness of places of employment;

c. simplicity and economy of engineering equipment.

31. As investigations have shown a population of 200,000 to 250,000 satisfy the requirements of a new town which would become a local centre.

32. In the German Democratic Republic, a good instance of the building of a new town on the basis of an industrial enterprise is Stalinstadt, which was built around a large iron and steel works. It has a population of 50,000 and consists of four separate neighborhoods and a general town centre linked by the main thoroughfare with the entrance to the enterprise. Cultural and service establishments were built simultaneously with the dwellings. Stalinstadt is an example of the building of a town by a single builder and in accordance with a single plan.

33. To meet the extensive industrial and housing construction that is going on, the architects of the German Democratic Republic have worked out several fundamental principles that serve as the basis of subsequent town-building practice. They justly consider that unlimited expansion of the area of town and growth of its population leads to grave and enduring shortcomings in the structure of the town itself, in the transport system, in the organization of cultural life and in supplying the population with daily necessities.

34. Investigations conducted in the German Democratic Republic showed that from the functional and national economic points of view, a town must have a population of not less than 20,000 and not more than 60,000-80,000.

35. Reconstruction of Towns: The various tasks of restoring and reconstructing towns were set in accordance with the extent to which these towns were destroyed. However, the fundamental basis of the projects for all towns requiring restoration was the creation in them of a new functional structure in conformity with modern town-building requirements and the true interests of the people.

36. In the reconstruction of Stalingrad, the city's architectural lay-out was revised. At the same time, close attention was given to the climatic and natural conditions - the majestic spaces of the Volga, the picturesque valleys of the Tsaritsa Mechetka rivers, and Mamayex Hill, which dominates the city.

37. Stretching for 60 kilometres (approx 37 miles) along the Volga, the city is interconnected by a system of lateral thoroughfares and boulevards. The esplanade is being reconstructed and converted into a broad boulevard. The ensemble in the heart of Stalingrad, where monumental public buildings are being erected, has been planned anew. Local squares are being laid out in each of the main districts. The plan devotes special attention to the planting of open spaces. Parks with an area of from 50 to 300 hectares (250 to 750 acres) have been laid out. A suburban zone with Young Pioneer camps, holiday homes and sanatoriums is being created around Stalingrad.

38. A special office, the Glavstalingradstroi, was organized in 1945 to head the building work in Stalingrad. In addition, a number of organizations were set up to handle housing and construction of utilities and a designing bureau was established at the office of the Chief Architect of Stalingrad to draw up detailed plans for various parts of the city and for the construction of dwelling, cultural and social buildings. Similar offices and planning organizations were set up in all the major towns where reconstruction work was started.

39. Redevelopment of Towns: Rapid industrialization and the building of new industrial enterprises, has led to a considerable growth of the existing towns. This in turn has demanded a reorganization of their planned structure and public services on socialist principles with account of modern requirements in municipal economy, engineering equipment and transport facilities.

40. Many of the existing towns were built haphazardly, with an excessive density of buildings in the centre and an extreme sparseness of buildings along the outskirts. Naturally, during the reconstruction of such towns there was the task of diminishing the density of buildings in some parts and of increasing the density in others. Existing industrial and residential districts also had to be isolated.

Chkvarikov, V., Town planning in Russia --8

41. A detailed program of the rebuilding of an old town was set forth in an historical document of Soviet Master plan-town-building: the General Development Plan for Moscow. This plan established that the fundamental task of redevelopment is to correctly distribute dwelling houses, industry, and warehouses, waterways and greenery, doing away with congestion and correctly organizing residential districts with normal, healthful conditions of life for the population. Thus, the task of dividing a town into function and building zones was precisely formulated for the period of reconstruction.

42. The plan envisaged the removal from residential district, enterprises that are harmful in a sanitary respect; the development of residential districts in the healthiest and most picturesque parts of the town; a fundamental reconstruction of the main thoroughfares, and the extension of old and the building of new streets with the creation of large, architecturally integrated town ensembles.

43. The plan limited the growth of the town to 60,000 hectares (approx. 330 sq. miles), and the population - to approximately 5 million people.*

44. All these principles of the General Plan, which are now being implemented, have brought about a great change in the life and appearance of Moscow. The plan is being amended in accordance with the volume, speed and technical conditions of modern construction, but its principles remain unchanged to this day.

45. Extensive reconstruction of throughfares and residential districts has been carried out in Moscow in the post-war years. The city now has new thoroughfares leading from the central districts to the outer automobile roads.

46. An even greater influence on Moscow's architectural appearance has been exerted by the building of new residential districts in the outskirts, where there had been no planning and organization of public services. These new residential districts, which sprang up according to plan in different parts of the city - on the Highway of the Enthusiasts, on Mozhaisk Highway, in the Peshanaya streets, and many others, as well as in the vicinity of the biggest auto works in Moscow - have basically transformed Moscow's outskirts.

47. It goes without saying that many problems of reconstruction still await solution in the towns. Mistakes have also been made during the redevelopment of a number of towns. In some cases, instead of planned and concentrated building in districts provided with all engineering communications, the work was carried on in accidental, vacant lots. Such "reconstruction" did not bring about any important changes.

*Ed. Note. Thus the plan provides a gross density of 83 persons per hectare or 33 persons per acre at the maximum extension of the city.

48. Among the reasons that gave rise to shortcomings and errors were the incorrect distribution of industry in towns, and insufficient account being taken of the everyday needs of the people and the demands of modern industrial technique and economy of construction. Sometimes, the rules of the functional division of towns into districts and construction zones were not observed and this created an overlapping of industrial and housing construction and led to violation of elementary sanitary conditions.

49. Historical towns: In Poland many historical architectural ensembles have been restored. However, as our Polish colleagues note, they have gone much too far along the path of recreating all destroyed monuments of architecture, sometimes at the expense of impairing living conditions. For that reason they are at present striving to implement the following principles:

a. in preserving the historical lay-out, rebuilding only buildings of great architectural value and applying modern forms to the rest of the project though subordinating them to the historical monuments by observing a corresponding architectural scale;

b. isolate urban transport from the historical ensembles;

c. adapt the ensembles that are being restored to the specific conditions in which they are utilized.

50. The polish architects believe, that if correct spatial and silhouette correlations are preserved, the contrast between the historical and new ensembles should not cause misgivings.

51. It must be said that the planning and building up of historically shaped towns bears the imprint of its time with its limitations and all its contradictions. That is why the historical continuity in the formation of towns should not be ignored and they should be carefully examined in every case to discover what town-building features have taken shape in their planning and building up and what real prospects they offer. An example of such an approach are the special schemes developed in Czechoslovakia for the reconstruction of 40 towns to be kept as reservations.

52. The architects of Czechoslovakia have outlined extensive and interesting reconstruction for all their towns. They note that while the new concept of town-building is beginning to predominate in the country, the historically shaped character of a town is still one of the corner-stones of its reconstruction. The goal is to preserve and develop as far as possible the outer and inner appearance of a town and the layout peculiar to it. Therefore, it is necessary to study carefully what traditional elements may be applied, while taking account of modern requirements in the construction of new parts. Respect for the structure of the valuable historical

ensembles by giving them new and expedient functions, the removal of public and individual transport from the centre of town so forth.

53. A characteristic feature in Prague is the combination of the old historical nucleus in the heart of the city with the big residential districts of a modern metropolis and a developed manufacturing industry.

54. However, in Poland, Czechoslovakia, Rumania, Bulgaria, Hungary and the German Democratic Republic with their housing shortage, the implementation of reconstructive measures is, as in the USSR, hindered by the necessity to preserve temporarily existing old houses. In all probability, the main line in the next few years will be the construction of new dwelling houses on vacant land. But the countries of socialism cannot but take account of the fact that certain redevelopment will have to be done within the towns, in those districts with ramshackle houses.

55. Conclusions - Regional Planning of Towns: Socialist town building aims to create new forms of settlement. These new forms are:

a. A rational distribution of inhabited localities which would meet the tasks of planned development of the national economy and the distribution of the country's productive forces;

b. A mutual situation of industrial and residential territories which would surmount the contradiction between the interests of production and the lives of people, in other words, the attainment of a sharp improvement in the sanitary and hygienic conditions of life.

56. In socialist countries it is considered that a practical way of radically solving the age-long problem of judiciously arranging a town is:

a. To find an expedient solution to the problem of district planning;

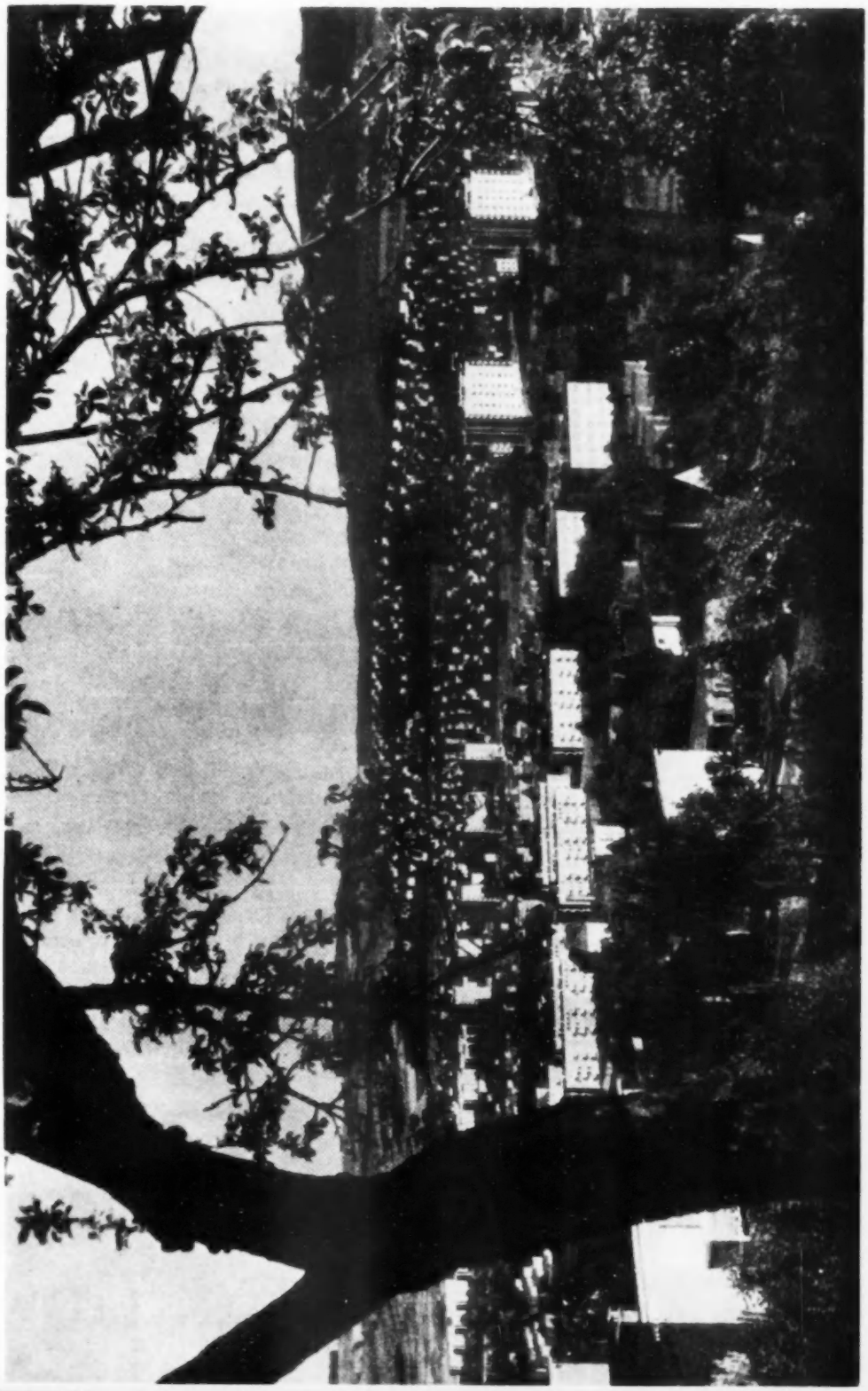
b. To limit the growth of big towns and to decongest them through the building, if possible, of a system of satellite towns;*

c. To develop small and medium towns in accordance with their regional features;

*We have noted earlier in Ekistics the recent popularity of Ebenezer Howard's sixty year old concept of satellite "garden cities" (Ed.)

International Union of Architects
CONSTRUCTION AND RECONSTRUCTION OF TOWNS, 1945-1957. Moscow, 1958.

CZECHOSLOVAKIA · ЧЕХОСЛОВАКИЯ



102. *Gottwaldov. View of the town in the southern direction*

d. To rationally utilize the old parts of big towns, proceeding from the possibility of reconstructing them and developing new areas within the limits of their maximum permissible size;

e. To build new towns, whose location and size would be determined by the principles of economic planning and the schemes of district planning.

57. The general problems around which the activity of the architects of the socialist countries are concentrated at the present time are similar to those that worry all progressive town-builders throughout the world, whose attention is likewise fixed on the d sorder in the old towns and the building of new towns. The difference is not so much in the tasks as the ways these tasks are solved. That depends on the features of a country's social system and economy, which make the implementation of these tasks practicable either to a lesser or greater extent.

58. STRUCTURE AND ELEMENTS OF A TOWN. The approach to a solution of the structure of reconstruction and new towns is different everywhere. In the plans of such cities as Moscow, Leningrad, Budapest and Prague account must be taken of their historically shaped structure. Considerably greater freedom of choice is possible in the planning of new towns.

59. At the same time, the principles of shaping a town are the same in all cases: division of the urban territory into zones in accordance with their function, i.e. rational distribution of the territory in accordance with how it is to be used, taking into account the organization of urban transport;

a. Division into zones in accordance with construction indications, i.e., regulating the aensity and height of buildings;

b. Rational arrangement of industrial and residential districts as well as the network of cultural services and amenities and their engineering equipment.

60. The problem of dividing the territory of big towns into zones must be decided from the point of view of the maximum construction expenses on municipal equipment and transport. In the given case, the main premises for a calculation must be:

a. Provision of convenient communication between the residential zones and places of work;

b. Uniform distribution of public, administrative, cultural and service establishments and all places daily catering to large numbers of people;

c. Removal of big hospitals, dispensaries, institutions of higher learning, research institutes and so forth beyond the town limits to locations with the most favourable natural conditions.

61. Polish architects have rejected the "dismembered" or "compact" town schemes as well as too rigid zoning schemes. Noting the dependence of the structure of towns on natural conditions and the exist nt build-up, Polish architects believe that the basic urban elements must be so arranged as to make their transport ties as short and simple as possible.

62. Industrial Districts: The absolute size of new as well as reconstructed towns had a great effect on their layout. In the USSR, there is a general tendency to avoid too large industrial districts (a maximum of 25,000 working people) so that several districts are usually organized in big towns. For instance each of the industrial districts in Stalingrad and Minsk is connected with residential districts which gravitate to it.*

63. An analysis of planning practice shows that there are three main methods of distributing industry in a town: separately located enterprises, one industrial district or a group of industrial districts.

64. In the practice of modern town-building, electrification, automation of industry and the employment of atomic power in industry may plan an important role in changing the principles guiding the distribution of industry: in some cases the enterprises may be removed farther away, while in others they may be brought closer to each other and to residential zones.

65. In planning industrial zones, with the inclusion of heavy and processing industries, Soviet town-builders strive to create a complete industrial complex, i.e., to place technologically linked enterprises side by side while limiting the territory of the industrial district to 400 hectares (approx. 1.5 sq. miles) and the number of workers to 25,000.

66. Light industries, food, wood-working, and instrument-making industries, and also certain enterprises of the machine-building industry and so forth, are likewise distributed in accordance with the principle of a technologically linked complex, but are situated much closer to the residential zones. An exception is the small, catering industry for whose location, it must be admitted, no precise directions have been given. In the USSR and in most of

*Stalingrad was an early example of the application of the "linear city" concept (Ed.)

the People's Democracies, this industry is situated throughout the territory of the towns, sometimes in accidental lots, in unadapted buildings and so forth. Frequently this evokes just censure from the inhabitants of the surrounding residential blocks.

67. There is a striving to regulate the distribution of industry through the following measures:

a. Drawing up schemes of district lay-outs for these areas which are economically the most important;

b. Elaborating projects for the laying out of suburban zones around big towns;

c. Rationally dividing town territory into functional zones, with the organization of industrial districts outside the residential zones at a distance that allows convenient transport communication between the place of work and residence with minimum loss of time;

d. Regulating the distribution of enterprises of light and small industries, which can remain in the residential territory in specially allotted plots;

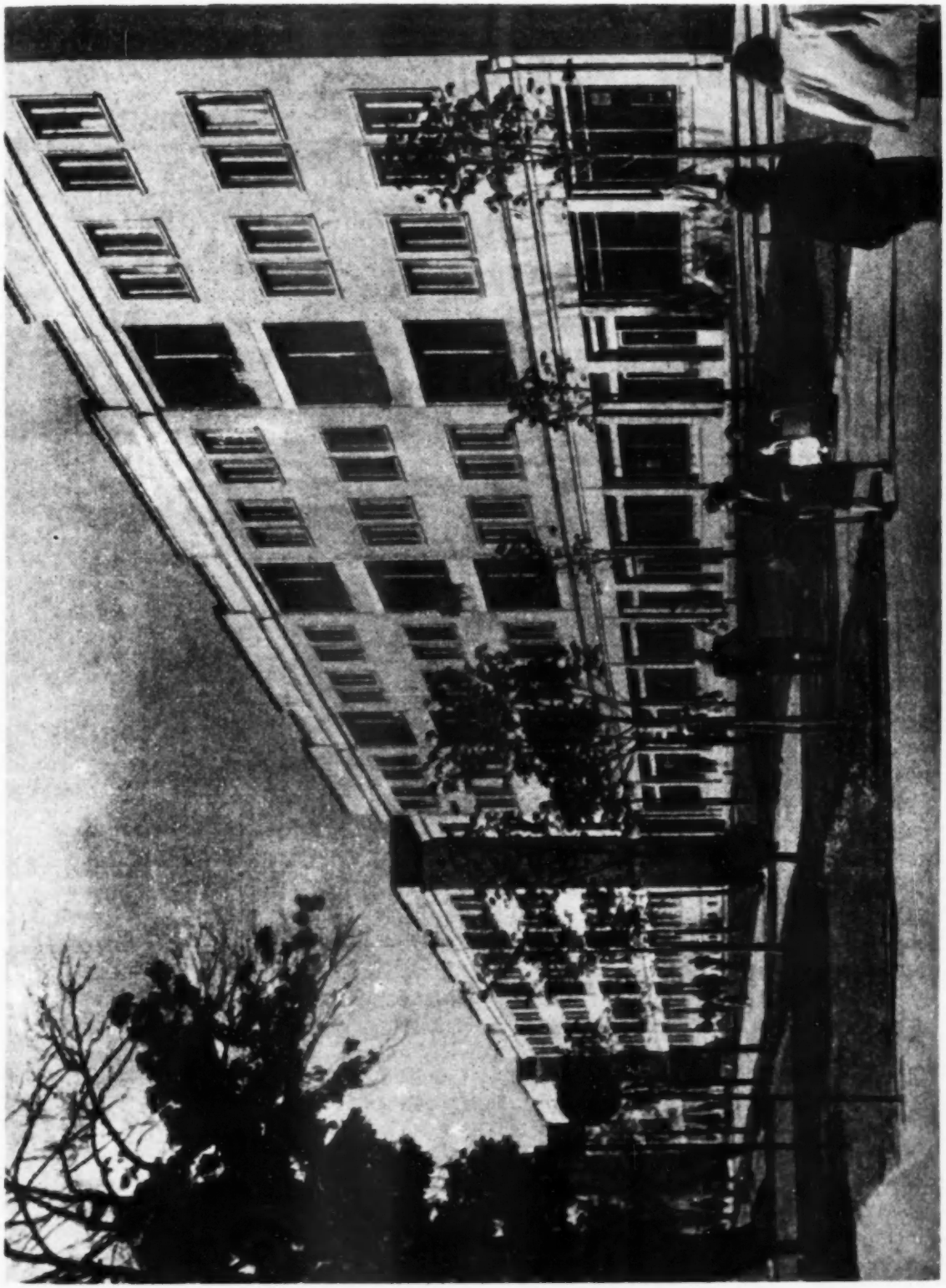
e. Carrying out, during the first stages of the implementation of planning projects of the necessary measures to decrease harmful waste from these industrial enterprises, which cannot for one reason or another be removed from the residential territory;

f. Planting protective zones of greenery.

68. Residential Districts. At the present time, in the USSR, Poland, Czechoslovakia and other countries, the predominant unit of the town layout is the neighbourhood, which is bounded by streets and consists of a finished complex of cultural services and amenities.

69. Under conditions of reconstruction and particularly construction on the vacant territories of a neighbourhood, there arises an area of public open space (inter-block gardens, rest squares, sports grounds, swimming pools, children's play grounds, etc.) which is as important an element of the neighbourhood as the dwelling houses and the cultural and utility buildings. The organization of all these elements within the neighbourhood ensures the best architectural layout of the dwelling area, and consequently creates the most favourable conditions for the life and repose of the population.

International Union of Architects
CONSTRUCTION AND RECONSTRUCTION OF TOWNS, 1945-1957. Moscow, 1958.



37. Cracow - Nowa Huta. Dwelling houses with shops. 1957

70. In each case, the total area of a neighbourhood depends on the arrangement of the streets encircling it and fluctuates within limits of from 20 to 50 hectares (approx. 50 to 125 acres) both for a new site and for a reconstructed districts. The population of a neighbourhood, which depends on the height of the buildings and the actual situation of the layout, varies from 5,000 to 15,000 people.

71. Through traffic is completely excluded from the territory of the neighbourhood. Access to dwelling houses, public buildings and public open space is gained chiefly along loop roads and cul-de-sac roads.

72. In the aggregate, the conditions and demands made on the building up of towns brings out the expediency of a mixed building up of residential blocks with houses of different height. In such blocks it is possible not only to provide people with better living conditions but also to achieve greater diversity of architectural form, to make better use of natural conditions (particularly the slope of the land) and to ensure the houses and the inter-block territories with good insulation and aeration.

73. The criteria of the economic and hygienic aspects of building are:

a. The density of the housing space, expressed in the square metres of floor space per hectare of territory in the block neighbourhood;

b. Density of population, expressed in the number of inhabitants per hectare of territory in the block neighbourhood.

c. Density of building development, expressed in a percentage of the area under buildings to the total area of the neighborhood.

74. Since in some blocks or neighbourhoods part of the territory may be utilized for catering to the social requirements of a wider population of the district or town, the average density is usually calculated in two ways:

a. For the entire territory of the block, group of blocks or the neighbourhood (gross density);

b. And for territory set aside only for housing construction excluding lots intended for the building of schools, children's establishments, district parts etc. (net density).*

*Presumably also excluding streets and public open spaces (Ed.)

Chkvarikov, V., Town planning in Russia --15

75. In so far as the rated norm of housing space is taken as 9 square metres per person (11.5-12 square metres of total housing space), the projected density of population in towns is:

a. For buildings of 2-3 stories - 200-300 persons per hectare (80-110 persons per acre);

b. For buildings of 4-5 stories - 400-500 persons per hectare (160-200 persons per acre);

c. For buildings over 5 stories - 520-600 persons per hectare (200-240 persons per acre).

These norms were approved at the close of 1957 and are 10 percent below those that are now being applied.

76. In conclusion, the tendency is growing to enlarge residential blocks to acquire the importance of a primary planned unit of a residential district, which in addition to dwelling houses includes the full complex of cultural and service establishments. The size of neighbourhoods and of groups of residential blocks on dwelling complexes are set at approximately the same size, proceeding from the requirement of school buildings and the lay-out of the main thoroughfares. This size ranges from 20 to 50 hectares, while the number of people that it is considered expedient to settle in the neighbourhoods ranges from 5,000 to 15,000.

77. Secondly, the dominant type of dwelling house is a sectional building of 3-4-5 stories built in accordance with standard schemes and standard divisions. Separate buildings of 6-8 stories are being erected in the central districts of big towns, chiefly in the capitals. In medium and small towns, as well as in the peripheral districts of big towns the dominant type is 1-2 story divided house as well as single-storey individual houses, built by workers and employees.

78. Network of Cultural and Service Establishments. The network of establishments in residential blocks and neighbourhoods includes schools, kindergartens and creches, shops, dining rooms, sports ground. Cinemas, clubs, specialized shops, out-patient hospitals, sports structures, and so on are enterprises of a district scale. Lastly, buildings such as houses of culture, theatres, big cinemas, libraries, hospitals, stadiums and department stores are among the enterprises of town importance.

79. Excessive congestion in big towns of the network of trade, cultural and service establishments is prohibited because it sharply increases passenger traffic requiring big parking lots and overloads the transport system. A more uniform distribution of shops and cultural service establishments provided for in the planning of neighbourhood

must improve not only services for the population but also the organization of the urban transport system. The trade network is therefore being decentralized to provide the population with best possible service, and there is now a tendency to set up small trading centres within convenient reach of residential blocks and neighbourhoods, in which only small shops augmenting the general network are planned.

80. Planting of Greenery: The planting of greenery in new towns and towns under reconstruction has been receiving considerable attention in the post-war period. Everywhere there is a tendency to plant trees and shrubs in town territories forming a single system with natural belts of greenery. Wherever possible this is in areas that are unsuitable for building development. New vegatation zones are also being created in connection with the building of public and sports structures, the laying-out of botanical gardens and zoos, the modernization of aquatoriums, as well as creating protective and dividing zones for functional districts.

81. Urban Traffic and Transport. Depending upon the intensity of the traffic in towns, the construction of an underground railway and the electrification of roads was conducted simultaneously with the reorganization and extension of other forms of transport.

82. In spite of the fact that in the USSR and other socialist countries the development of the automobile transport is relatively weak, this circumstance does not free the towns from the difficulties of street traffic. The number of cars in the towns of socialist countries will inevitably grow and it is expected that there will be 40 to 60 cars per 1,000 population. In Poland the norm accepted is already 100 cars per 1,000 population, which corresponds to the average in big European towns.

83. Extensive work has been carried out in Moscow to reconstruct the existing radial and ring highways and lay new, duplicating radial and ring highways. In the towns a deplorable practice has taken shape of combining mass transport arteries with the main thoroughfares. An intolerable situation has also arisen in residential districts, through which, as a rule, traffic arteries pass.

84. In future it is extremely important that a progressive approach to planning be applied widely and consistently. This approach consists in:

a. Observing the optimal size for towns with account of the possibilities and convenience of urban traffic so as to avoid the emergence of major transport programs;

b. Distributing the main enterprises so that there is no jam in the flow of traffic;

c. Strictly differentiating streets in accordance with their purpose to concentrate the main stream of cars in a limited number of thoroughfares with high-traffic capacity crossings and squares, thus ensuring safety for cars and pedestrians;

d. Setting up a sufficient number of public cultural and amenity service centres and uniformly distributing the network of service establishments in residential blocks.

85. Artistic Composition Problems of Town Planning and Development. The point of view that artistic and compositional questions of planning and development cannot be isolated in a separate problem and decided without close regard for the social and functional organization of towns is recognized universally.

86. We are in full agreement with the opinion of Czechoslovak architects who consider that the continuously growing material and ideological requirements of the people are the decisive factor in the formation of a town's features. In their town building theory and practice there is the dominant opinion that, in an aesthetic respect, each town has its own vividly expressed individuality, which proceeds from specific conditions of its public and economic life, historical development and the features of the natural surroundings and landscape.

87. The point of view of Polish architects on problems of town-building composition also deserves attention. They take town-building composition to mean a quest for a form of the town or its features best satisfying the requirements of the population in definite surroundings, and under a definite level of technique and economy. However, Polish architects believe that buildings should not limit themselves to a correct functional approach to the composition. In their opinion an artistic approach is also essential. For spatial compositions they apply a number of general principles, such as: the principle of conscious comparison of contrasts, the principle of mutual harmony of elements, their equilibrium and so on. They strive to diversify the town silhouette and the solution

of inner-town spaces, utilizing for this purpose a method of checking the conditions in which the elements are best visible from various points of view.

88. In post-war Soviet town-building practice there has been until recently, an attraction for the external side of architecture to the detriment of the solution of functional problems and without regard for the possibilities of modern construction technique. In the development of towns, canonical methods of the past were uncritically borrowed on the pretext of mastering traditions running counter to modern tasks of housing and transport.

89. Of great importance in the attainment of artistic unity are:

a. The system of thoroughfares determining the spatial connection of separate parts of the town;

b. The location of public centres;

c. The distribution of open spaces and spaces planted under trees and shrubs;

d. The grouping of mass residential and cultural and service development in accordance with the height of the buildings forming the silhouette of the town.

In the past residential districts were inert units between the town public centres which served as the basis of the plan composition, but today with their interior centres they are acquiring major compositional importance and a specific architectural appearance.

90. With the present immense building development, the architect ceases to think in terms of a single house. He is given an opportunity of applying a single idea to huge building complexes and giving these buildings artistic content.

91. We must not be afraid of the so-called "monotony" of standard buildings. We believe that in modern conditions where construction is carried on by industrial methods, the necessary diversity of separate blocks of buildings and districts must be and is being achieved primarily by means of architectural composition.

Chkarikov, V., Town planning in Russia --19

92. The beauty of a town depends to a large extent on the level of construction. A high level of construction helps to reveal the aesthetic ideas contained in the design. This is especially important in mass industrial construction which is based on artistic simplicity and an expressiveness of forms.

Tonev, Luben

EFFECTUATION OF PLANNING PROJECTS IN THE USSR AND SATELLITES. International Union of Architects, Fifth Congress, Moscow, July, 1958. Theme II, "Legislative, social and economical aspects in the realization of projects." Congress Papers, Moscow, 1958.

711: 35: 333 (47) (437) (438) (439.1) (497) (498) (51) (519) (43)

1. Luben Tonev, head of the Bulgarian Town Planning Institute, presented a resume of various methods and problems of implementing town planning proposals in the countries associated with Russia and the People's Republic of China. It presents the viewpoint and problems of countries where local plans have to fit into a national economic plan which determines the possibility of timing of their effectuation.

2. Town-planning is at the same time a science, a policy and an art and it also involves actual building, construction, all of which are intended to make our towns and cities better places to live in. The prevailing economic, meteorological, ethnological, historical, and other conditions have to be taken into consideration and related to the available techniques and resources. This is why both town planning theories and town planning achievement have always reflected, and continue to reflect the aspirations as well as the social and economic conditions of a country.

3. The most typical trait of socialist town planning is its extremely close connection with the development of the country as a whole. Public ownership of industries, the absence of private property (or its subjugation to public interest) and planned economy have made building an essential part of national development. Friedric Engels said that "each factory is an embryo of a new town", and planned development of industries and other productive activities form the essence of socialist economy.

4. The very close ties existing between town planning and the economic, social, cultural and technical development of a socialist country is reflected in the brief, which the town planner always receives from government institutions before he starts work on any scheme, whether this be related to the construction of a new town or to the remodelling of an existing one. Maintenance of these close ties is accentuated by the unity of the central and local budgets, which both guarantees the fulfilment of a town planning scheme, and ensures that town planning policies shall remain consistent throughout the country.

5. Another characteristic trait of socialist town planning is its unrelaxing ties with the general political line of the Government.

6. We believe that real care for the human being means a well organized modern residential block with plenty of sunlight, fresh air and verdure; with schools and kindergartens, provision stores and other social, cultural and medical institutions conveniently located nearby. We consider that the benefits of sanitation and of pleasing surroundings must be within reach for everybody. Much emphasis is laid on the social aspect of town planning in all the reports submitted by the socialist countries.

7. The third trait common to town planning in all the socialist countries is the existence of a realistic and potent legislation which determines its goals and, ensures the fulfillment of its undertakings. In the socialist world legislation has become a means of expressing the policies in all the spheres of life, town planning being no exception. The legal acts conferring power of law to the five year plans and the annual national development plans are amongst the most important acts in our countries.

8. Without contravening any fundamental town planning principles, differences in detail between the countries are both natural and unavoidable. In the USSR all the means of production have become public property, private ownership of land does not exist, and the planning of national economy is more advanced than anywhere else. The other countries covered by the present report have reached different stages on their way towards this goal. In Poland and in Czechoslovakia land in urban settlements has partially become public property in certain towns whilst in Bulgaria, Rumania, Hungary and Yugoslavia rights of ownership of landed property in the cities have remained unchanged. Other differences are due to inequalities in the technical development of the various countries, to the widely varying economic possibilities, and to a number of geographical, technical, historical and other factors.

9. Planning Authorities. In the USSR, the Union Republics, and in Yugoslavia, federated districts have their own town planning organs working in close contact with similar organs of the Central Government.

10. In the USSR problems related to the creation of new towns, and to the reconstruction and remodelling of existing ones, however, fall within the jurisdiction of the Council of Ministers of the Union, or of one of the Union

Republics. With the reorganization of industries and construction work in 1957, the Economic Administrative Districts also received wide powers in many questions pertaining to town planning.

11. In China, the Government acts in all matters pertaining to town planning through the National Reconstruction Committee and the Ministry of Urban Development. Undoubtedly in isolated cases of nation-wide importance, decisions are taken directly by the Government itself. On the other hand, quite important town planning problems are entrusted to provincial councils and their technical organs, though city councils work on questions of detail only.

12. In Poland capital investments necessary for the creation of new towns or the remodelling of the existing ones have thus far been drawn from the central budget. It is to be noted however, that a decentralization process is now under way in Poland, and numerous town planning problems are being gradually transferred to the local authorities.

13. In Czechoslovakia, decisions on the construction of new towns are taken by the Government, whilst the reconstruction of existing towns is dealt with either by local or central authorities depending on the importance of the work. The supreme authority in town planning is the State Committee of Building. In certain provinces the Provincial People's Committees have their own Public Works Departments which receive their instructions on certain matters directly from the aforesaid committee. Large cities, like Prague, have their own Public Works Departments.

14. In the German Democratic Republic (East Germany) all questions relative to town planning fall within the jurisdiction of the Council of Ministers and the Ministry of Construction. A special Committee has been created by the Council of Ministers which presents to the latter all town planning proposals and coordinates town planning work. Questions of detail, such as the planning of separate districts or neighbourhoods, architectural designing etc., are within the competence of the local authorities.

15. In the Hungarian and Rumanian People's Republics all questions pertaining to the elaboration of town planning schemes, the construction of new towns and the remodelling of the existing ones are decided by the Council of Ministers.

Centralization of planning also occurs in Yugoslavia, Bulgaria, and North Korea, with decisions made on the basis of the National Economic Development Plan.

16. Town Planning Codes. Questions regarding property rights on land are of prime importance to town planning. As stated in paragraph 8, private property of land no longer exists in the USSR. In Poland, Czechoslovakia, and the German Democratic Republic this principle is carried through only in certain larger towns or parts thereof which have been badly damaged during the war (Warsaw, Bratislava, parts of Berlin and others), or those which have been abandoned by their population after the war (certain frontier regions in Czechoslovakia). In China all land in towns has been nationalized but property rights on buildings have been maintained. In Bulgaria private ownership of land and real estate has been maintained, exception being made for larger estates which have been nationalized. Cooperation of land owners is encouraged and may be enforced by the authorities when this becomes necessary for town planning purposes. Hungary or Roumania have also maintained private ownership of real estate; however this is overruled by public interest when necessity arises.

17. A second point of town planning legislation common to all these countries is that the national economic development plans require a planned development of the economy in each territorial region.

18. In 1958 a new set of regulations governing town planning and urban constructions were approved in the USSR. Its main points are as follows:

a. Construction of new towns and settlements, as well as the remodelling of existing ones, may be undertaken only in accordance with duly approved town planning schemes and detailed layouts of these localities;

b. Town planning construction must ensure creation of favourable living conditions for the whole population and of conditions necessary for the unhampered development of industries, thus promoting uninterrupted improvement of living standards, economic development and progress of the socialist culture;

c. Designing and construction of towns and settlements must be consistent with the latest scientific achievements and must be based on the contemporary requirements of economy, engineering and architecture.

d. In the larger cities creation of new industries must be completely banned with the exception of such enterprises as are indispensable for the normal life of the community (various public services, food supplying industries, etc.). Construction of dwellings may be authorized not only within the town boundaries but equally in satellite towns, the location of which is governed by local conditions and certain special considerations. New industries as a rule shall be created either in existing smaller or medium towns, or in the vicinity of towns created anew. All local conditions must receive due consideration; too great a concentration of industries should be avoided; the population of industrial towns should be limited to 200 -250,000.

e. In those areas with unified power supply and transportation systems, with large groups of interconnected industrial enterprises based on a complex of natural resources, and with unified systems of public services, the planning of towns and settlements may be carried out only on the basis of regional planning and must take consideration all construction work proposed.

f. Town planning schemes must provide a distinct zoning of territories. Residential districts, industrial developments, parks and open spaces of major importance, transportation facilities (railway, shipping, airfields, motorized transport), warehouses, etc. must be confined to separate and well defined areas. Selection of building sites for each purpose must follow the zoning principle established by the master plan.

g. During the remodelling of existing towns, smaller blocks should be merged into large neighbourhoods and overpopulated regions with insufficient recreation grounds and open areas must be decentralized. Construction of new buildings in districts subject to alteration should not increase the population density, thereby lowering living standards.

h. The architectural composition of a town with its parks and open spaces must provide a simple and attractive aspect. All necessary conveniences must be provided for the population with due regard to economic requirements. The best building traditions of the peoples of the USSR and modern architectural trends must be followed. Local conditions must be utilized to the fullest extent.

19. Town Planning Organizations. The Soviet Union possess in this respect the largest experience, and has helped all the other socialist countries in the creation of the necessary town planning bodies and in organization of their work.

20. As a rule designing work in all Socialist Countries is carried out by specialized state designing organizations (offices, institutes, etc), staffed with highly qualified specialists in architecture and different branches of engineering. In countries where private ownership of real estate has been maintained, buildings belonging to private interests may be designed by independent engineers and architects working on their own account. However, town planning projects are elaborated by the central or local state designing offices who have on their staff architects, town planners and specialists in various branches of engineering, economics, meteorology, parks and open spaces, etc.

21. Direct responsibility for the effectuation of town planning schemes lies with the city architectural department. This is assisted by the City Town Planning Council, composed of representatives of architectural organizations, public organizations concerned, and other specialists. In order to endow the architectural departments, which are under Municipal Authorities, with more authority, they are nominated by and remain under the guidance of the Central State Town Planning Organs.

22. The Approval of Town Planning Projects. Since each project is closely connected with the country's overall economic development, it is necessary that, before embarking on any project, those in charge of the work should first receive and study the official approved programme containing economic data on the future development of the town. This information must include the proposed population and the basic capital investments to be made by the government or other public organizations for the development of the town.

23. Once prepared the planning project must be discussed with all the governmental and public organizations concerned, especially in its relation to the official economic development programmes. Before final approval of any plan written agreement must be obtained from all parties regarding all proposals which may interest them. This forms an important part of the whole procedure.

24. The approval procedure for site planning projects has not been developed to the same extent. In all the countries concerned, site planning appears still to be in its initial stage.

25. Effectuation of Projects. The general town planning scheme as a rule covers the development of a town for a period of 15 - 20 years and is more or less a directive document. More concrete plans for specific effectuation are worked out for each stage.

26. First stage plans are always coordinated with the five-year economic development plans which have the power of law. Therefore, all the town planning proposals must be fully ensured by adequate provisions in the budgets of the State, of the local authorities, and of the appropriate public organizations. Other proposals contained in the prospective town planning scheme will be carried out by stages and be financed in accordance with economic development plans for the following period. Unquestionably certain adjustments and amendments to these plans may be adopted later. This ensures flexibility of the scheme making it possible to coordinate it with new requirements unavoidably arising at a later stage.

27. Capital investments are provided mainly by the government either directly or through local authorities and public organizations; private investments are sometimes also used. By these we mean investments made by individual persons or cooperative organizations. However, up to 70 percent of such investments one is usually supplied by the government through loans, credits, etc., and therefore falls again within the scope of national planning. Only a very small portion of all town planning proposals is really carried out with private capital. Even the construction of individual houses, requires also building materials, transportation facilities and labour, all of which is only made available according to plan. Lately, many socialist countries have taken steps to encourage construction of individual and cooperative dwellings through allocation of credits and loans. Private construction of dwelling houses is becoming more and more wide-spread, especially by cooperatives. Credits and building sites

are allotted for this by compulsorily merging small plots on a cooperative basis. This enables whole dwelling complexes to be erected in accordance with master plans.

28. Financing of the construction of new towns and settlements in the countries under consideration is relatively simple, for during the study of such projects all the technical and economical factors are very carefully considered. Approval of town planning schemes is always preceded by a careful analysis of the possibilities prerequisites for their fulfillment. This requires that the authors of town plans should present projects which are eminently realistic and economically sound. Every project must be substantiated by appropriate calculations and documents, especially in what concerns the first stage of construction work.

29. Major obstacles to the effectuation of planning projects. An obstacle common to all countries consists in the alteration of the national economic development plans, with the ensuing amendment to proposed capital investments. This require the alteration of town planning schemes or entails delays in their effectuation. In the future, elaboration and approval of comprehensive regional plans, linked with a thorough study of the economies of the regions concerned, should avoid these difficulties or reduce them to a minimum.

30. Another difficulty is due to the fact that funds for actual building work, especially in the larger towns, is supplied by various departments and organizations. This causes a certain lack in coordination, which reflects unfavourably both on the designing and on the actual construction work, and therefore affects the town planning scheme as a whole. In order to eliminate this difficulty it seems necessary that all capital investments should be concentrated in the hands of the municipal authorities.

31. This measure, already adopted in certain major cities of the USSR, has met with much success. The 1957 reorganization of industries and building and the creation of economic districts will undoubtedly help in avoiding these difficulties in other towns of the USSR.

32. Another difficulty is constituted by the tendency to develop and enlarge industrial and other enterprises. These enlargements are intended to bolster production and are carried out, even if such enterprises are situated in nonindustrial zones, in disregard of the general town planning scheme which provide

for their transfer elsewhere. Construction of temporary structures permitted to exist over lengthy periods falls within the same category of difficulties.

33. Further difficulties arise from the failure to demolish obsolete structures as proposed by the town planning schemes. Such demolitions may be necessary for various town planning purposes such as multi-story housing developments. But the acute housing shortage frequently forces the local authorities to leave existing dwellings intact, regardless of their condition, and carry out new building on vacant sites in the suburbs. This prolongs the existence of over-populated and unsanitary districts, leads to a premature spreading out of the town, and entails the lengthening of transportation lines, roads, public utilities, etc. This is done instead of concentrating first stage construction work in the central parts of the town provided with all the necessary public services. In order to overcome these difficulties in certain countries, and to some extent in the USSR, local authorities undertake construction of special buildings where temporary accommodation is provided for the inhabitants of dwellings to be demolished.

34. The premature and unjustified sprawl of towns over vast territories, even if within the framework of approved prospective town planning schemes, is due mainly to an underestimation of the importance which should be attached to the strict compliance with the staging of work as determined by the approved plans.

35. Various other difficulties arise; among them difficulties of expropriating land from private owners, lack of funds, competition and narrow interests of the various ministries concerned, and unauthorized work undertaken by individuals outside the scope of the plan.

36. Building control during development of planning projects. Actually, only a few general town planning schemes for the major cities of the socialist countries have yet been approved. At the same time these countries are undergoing rapid development and nation-wide planning constantly opens up new ways and means for economic expansion which brings forward new building problems. It would therefore be ill founded to hasten too much with the approval of general town planning schemes.

37. Those plans which were approved shortly after the war, before the main lines of economic development could be correctly evaluated, had to be restudied and amended some five or ten years later. At the same time, development cannot be halted because the designersfind it impossible to complete work on their plans or because certain governmental organs do not consider it fitting to continue building whilst before work on town plans is completed to secure that new buildings will not clash with the future plan.

38. In complicated cases concerning large developments the opinion of the acting town planners are discussed by the town planning councils and, in certain cases, are referred higher up to government institutions charged with the approval of town planning projects. In certain countries, including Bulgaria, whole urban regions, for which large scale remodelling is proposed, are declared "under veto" (by the decision of the municipal authorities or of the Ministry of Works) pending the approval of the general planning scheme.

39. An enumeration of all major building work proposed for the next five year period is always included in the general town planning programme received by every planner before he starts work on a specific project. This enables them to decide on the most appropriate location for such proposed developments during the first stage of town planning and construction work. The selection of building site is usually carried out in close contact with the developers. As this selection is carried out by a state designing office it acquires an official and compulsory character. Accordingly, when actual construction work has to start, all the most important questions have already been solved.

40. Proposals for the improvement of town planning codes. It seems indispensable that all the national sections, after careful analysis of their own experience, should postulate their ideas regarding the future development and improvement of town planning practices. A number of sections submitted many valuable and definite recommendations. Others, however, underestimated the significance. We had to get in touch with them requesting them to send additional information. Unfortunately, although certain additional materials have been received, this exceedingly important question has not been sufficiently clarified.

41. The more important suggestions are made by the Soviet Section in a detailed reply which intimates that, in order to enhance the quality of town planning, it seems desirable to limit work on questions of detail and to devote more time to the studies of basic problems. Among these, they list:

a. The study of economic factors determining the future development of the town and the growth of its population within the framework of regional plans;

b. The planning of suburban areas;

c. The staging of the whole planning project;

d. The creation of main thoroughfares and the organization of the transportation system;

e. The correct determination of territories necessary for the future development of the town and its zoning;

f. The elaboration of prospective plans for the development of green zones within the town itself and in suburban areas;

g. Fixing of the population densities in various zones.

42. For smaller towns, our Soviet colleagues consider that it would be better to work out simultaneously the general town planning scheme and the detailed lay-out of the city. As regards designing work itself, it is recommended that all major cities should follow the example of Moscow, Leningrad, and Kiev by organizing powerful designing offices, under the control of the Chief Town Architects, which would carry out comprehensive designing covering the whole territory of the town. The same centralization is recommended in respect of the financing and the control of building work. It is also recommended that all basic town planning questions should be covered by a town planning code and that sets of appropriate by-laws and regulations be created in each republic.

43. The Polish, Yugoslavian, Rumanian, and Bulgarian Sections find the greatest difficulties to planning is their legislation. Each of these countries seeks to improve this condition by preparing and passing unified modern town planning codes.

44. The Bulgarian Section also mentioned that, through compulsorily merging land on a cooperative basis, they were rendering possible the creation of large dwelling complexes and the effectuation of town planning proposals. As a temporary measure, the Bulgarian section proposed to legalize the creation of public squares on portions of privately owned sites which are not built up, without interfering with ownership rights on the building themselves and the land occupies by them. It was also felt that site-planning could be improved by the decentralization of planning authority.

45. The Hungarian Section expressed the wish that closer coordination be established between economic planning and town planning. The latter should be based on a set of stable and clearly defined principles and comprehensive programmes. Gradually the whole country should become covered by regional plans and each large development should fall within the framework of such plans.

46. Means of increasing authority and influence of architects and authors of town planning projects. It seems that town planning and urban construction could gain considerably through:

a. The enactment of legislations making compulsory the closest possible contact between town planning and the overall development of the country.

b. The strengthening of the theoretical and scientific basis of town planning which must be made dependent on economic data derived from site planning investigations and on specific geographical, meteorological and other conditions peculiar to each locality;

c. The strengthening of the authority of local institutions on all questions pertaining to the effectuation of town planning projects;

d. The granting of considerably wider powers to the Chief Town Architect in all matters concerned with town planning.

47. The development of town planning in all the countries requires the establishment of constant international exchanges on theorectical and practical experience gained in this field. We therefore consider it absolutely indispensable to create a permanent town planning body within the UNESCO. This body should undertake the analysis and generalization of experience gained in the planning and construction of towns all over the world. It should organize an Information Service and should undertake the edition of town planning codes, building regulations, etc. The present congress of the IUA should move motivated proposals to this effect.

Alabian, Karo.
CONSTRUCTION PROBLEMS AND PRACTICES FOR HOUSING IN THE USSR AND SATELLITES.
International Union of Architects, Fifth Congress, Moscow, July, 1958. Theme II, Technical problems and Industrialisation of Building." Congress Papers, Moscow, 1958.
69: 691: 728: 69.002: (47) (437) (438) (439.1) (497) (498) (51) (519) (43)

1. This paper presents very interesting viewpoints on the industrialization and mass production of housing. It describes the various ways in which this is being undertaken in Russia, the People's Republic of China, and the Democratic Republics of North Korea, Czechoslovakia, Poland, Rumania, Hungary, Yugoslavia, Bulgaria, and East Germany. Karo Alabian, Member of the Academy of Building and Architecture of the USSR, prepared this paper, with emphasis on the developments within his own country.

2. TYPES OF URBAN AND RURAL HOUSING. The adoption of standard projects was undertaken to fulfill the requirements of industrialization and for the quick and adequate production of house construction drawings. During the last years, type designing in the USSR has been characterized by a transition from apartments, or staircase-access units, to a series of standard dwelling houses suitable for use in various parts of the country after adjustment to local conditions.

3. The emergence of new industrial centres after the war required the new development of entire blocks of dwelling houses and districts. Standard designs of a variety of isolated buildings could not then be utilized in large-scale housing developments nor facilitate industrialization of building.

4. A new approach to type designing developed, which now consists in the preparation of whole series of unified standard designs. Each such series is characterized by common principles of internal lay-out and the type and quantity of sanitary and technical equipment needed. Simultaneously, work was completed on catalogues of unified structural elements such as wall elements, floor slabs, staircases, windows, doors, and equipment, etc., for dwellings and public buildings. This standardization of prefabricated parts is closely linked with the introduction of a unified modular system, coordinating sizes of structural components and tolerances.

5. In the USSR, the basic modular dimension adopted for housing construction is 10 cm. (4.4 inches) with a larger modular dimension of 40 cm. (17.6 inches). The lengthwise spans of dwelling houses are multiples of the latter. The use of this 40 cm (17.6 inches) module has permitted a very considerable reduction in the number of types of prefabricated elements.

6. In the USSR, mass housing construction in towns and settlements usually employs standardized designs. The nomenclature and number of a standard design series depends on the climate, national and local tradition, the conveniences provided, building height, structural system and building techniques. Such series are usually worked out for 5 - 6 years. Higher living standards, the development of the building industry, and the greater degree of industrialization call for their periodic replacements by more progressive standard designs.

7. Mr. Alabian mentioned certain points of disagreement on the methods of standardization in design. During the initial period some architects considered that standardization deprived the architect of creative freedom and failed to satisfy individual requirements of the residents. Discussions are still continuing in some countries, such as Sweden, regarding the goals to be pursued: whether the unit for standardization should be separate structural elements, apartments, staircase-access units, or whole buildings. Experience in the USSR has shown that only the standardization of whole buildings and the construction of a series of houses with unified structural elements can ensure completion of vast programmes in the shortest period.

8. The series of standard designs effective in the last five to seven years were developed by major state designing offices in the USSR. However, experience has pointed to the need of having a new series of buildings, more economical in their internal lay-out and structural scheme.

9. In 1956 competitions were organized jointly by the State Committee for Construction and the Architects Union of the USSR for the best three, four, and five storey apartment blocks and for one and two storey dwelling houses. Proposals submitted had to provide for a marked reduction of building costs coupled with an improvement in living conditions. Net floor areas (excluding kitchens, halls, bathrooms, etc.) are as follows: one-room flats 18 - 20 sq. meters (194-216 sq. ft.); two-room flats 27 - 30 sq. meters (290 - 325 sq. ft.); three-room flats 36 - 40 sq. meters (390-430 sq. ft.).

10. Each flat must have a living room measuring not less than 16 sq. meters (172 sq. ft.); floor areas of bedrooms are as follows: for 2 persons, 10 - 12 sq. meters (108 - 130 sq. ft); for 1 person 6 - 8 square meters (63 - 86 sq. ft.). Areas of ordinary kitchens average not less than 4.5 sq. meters (48 sq. ft.) and kitchen-dining rooms from 7 - 11 sq. meters (75 - 120 sq. ft.).

11. In the new types of apartments adopted for urban construction in the USSR substantial economy is derived from improved lay-out of rooms and auxiliary premises. They may have one room without separate entrance, areas of kitchens may be somewhat reduced, and in one and two-room flats, bath-rooms and W.C.s may be combined.

12. When plans are drawn up for the construction of blocks, the designs provides for a quantitative regulation of the different types of flats. They also allow for buildings of different height and length, depending on the loss available. Usually the following percentages of sizes of apartments are adopted: one-room, from 10 to 20 percent; two room from 40 to 60 percent; three room from 25 to 35 percent; and four to five room up to 5 percent.

13. Series of standard designs for three to five storey dwelling houses have been worked out for each of the three major climatic regions of the country. The first series comprises buildings with brick walls, concrete block walls or walls of masonary blocks; the second walls of large concrete blocks; and the third walls of large prefabricated panels. Structural schemes, flooring and staircases elements, as well as the lay-out principles are the same for all three series. They differ only in the materials used for the construction of the external and internal bearing walls and the weight of building elements, designed for different types of cranes.

14. Special series have been worked out for major cities such as Moscow, Kiev, and Leningrad. These include buildings from 3 - 8 storeys high. Structural schemes for these houses are chosen with due consideration of the undertakings producing prefabricated elements in these towns.

15. It has become common practice to house shops, creches and kindergartens in separate buildings and this has also resulted in a reduction of the number of types of standard parts.

16. At the present time the design of several new types of dwelling houses is under way. They include hostel type houses with collective services. These houses are intended for small families or single persons, who usually have need of such collective servicing. The latter includes dining room, creche and kindergarten, laundry, centralized flat cleaning etc., which all go to make the hostel dwelling house a new and progressive housing unit.

17. Row houses have not been used in the Soviet Union to any large extent. However, standard designs for that type of house have been developed and it is expected that they will be used on a wide scale in Soviet cities and towns in zones reserved for dwellings of reduced height.

18. Rural housing. Rural areas are built up mainly with single storey houses with one or two apartments and individual gardens. Their structural elements have not been sufficiently unified. Architectural contests for a series of such houses was organized in the various union republics in 1957. The most interesting proposals were submitted by Ukrainian architects.

19. Design suggested by the Ukrainian architects comprise houses which may be built with the use of various materials, brick, slab-concrete blocks, large concrete blocks, natural rock, adobe blocks, cinder slag, concrete walls with infilling, wooden frame with reed slab walling, and others. This enables the individual builder to select the most suitable type of dwelling, depending on the building materials available locally. The structural scheme of these houses is unified. It consists of equal 3.6 meter (12 feet) spans enabling the unification of roofing elements, floor elements, etc. A single 1.2 meter (4 feet) module has been adopted for the planning structural schemes of all types of houses of this series. There are 10 variants of interchangeable solutions of verandahs and porches which may be used with each type of building at the option of the builder.

20. House types in China. In China slab blocks form the bulk of housing construction. Three-story houses with simplified sanitary equipment as well as single-storey row houses of simplified structure and with simplified sanitation are the most used in mass construction. Construction of two-storey houses is carried out on a reduced scale. Multi-storeyed buildings (of 4-5 floors and over) are built in the central districts of towns, while 6-8 storey buildings are built in some parts of Peking.

21. New housing in China is usually situated on vacant lots on the outskirts of towns. In large developments they are guided by approximately the following percentages for different types of buildings: single-storey row houses, 30-35 percent; two and three storey houses 27-30 percent; and four-storey houses 24-27 percent.

22. Units with 2 to 4 apartments on one landing have been standardized in China. The 1956 building code established the following net floor areas: one-room flats 14 to 18 sq. meters (150 - 195 sq. feet); two room flats 26 to 30 meters (275 - 325 sq. feet); three room flats 34 to 40 sq. meters (370 - 430 sq. feet); four room flats 54 to 62 sq. meters (585 - 670 sq. feet), and five room flats 66 to 80 sq. meters (712 - 864 sq. feet). Kitchens average from 4 to 8 sq. meters (41 - 86 sq. feet).

23. Standardization of houses and apartments. The following general conclusion can be drawn from the above: Standardization of houses and apartments is taking place on an ever broader nationwide scale. It is carried out according to standardized plans and methods which take account of the economic, climatic, and local features of the several parts of a country.

24. In some of the countries only the apartments or the staircase-access units are standardized. In the USSR, already over 80 percent of all housing is built in accordance with standard drawings.

25. The prevailing type of urban dwelling house is the three to five storey building without elevator, consisting of from 3 to 4 staircase-access units with two to three flats on each landing. One and a half or two room flats with kitchen or kitchen-dining room are the most common.

26. BASIC FACTORS ENSURING INDUSTRIALIZATION OF BUILDING. The standardization of buildings described above and the basic rules governing the design of dwellings constitute the most important factors in the industrialization of building in socialist countries.

27. Industrialization of building on a nationwide scale hinges on the following factors:

a. The existence of nationwide planning.

b. Builders, designing offices, construction enterprises, and building materials industry are all, or at least the majority, state organizations.

c. Their technical policy is implemented through central and local government and public bodies.

d. Mass construction of dwellings and public buildings is carried out in large schemes. In the old cities it takes the form of a comprehensive development plan and covers whole areas of new communities, arising in connection with the creation of growth of industrial centers.

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28. INDUSTRIALIZATION OF HOUSING CONSTRUCTION AND ITS ECONOMIC EFFECT. In the socialist countries the industrialization of housing construction is carried out by two main methods which will apparently continue to coexist for a certain time. The main method of industrialization consists in the conversion of the building site into an assembly site with all, or nearly all, large dimension structural elements and parts of the building being factory made. This building method is often called total prefabrication*

29. The other method is based on the comprehensive mechanization of all building processes, with the walls being made of brickwork, small concrete blocks or natural stone. Flooring elements are usually made of precast reinforced concrete with partitions prefabricated of concrete or other materials. This method may be called mixed or traditional prefabrication.

30. Introduction of large-size prefabricated wall elements necessitates the organization of production enterprises which entails substantial expenditures and time. Therefore, parallel to extensive introduction of large prefabricated wall panels and blocks, the bulk of housing in the next few years will still be built with masonry walls.

31. Important research work has been carried out in the USSR to reduce the thickness and weight of masonry walls through a partial replacement of brick by effective light-weight insulation materials (mineral wool slabs, slag plaster concrete slabs or fiber plaster slabs), through the use of hollow core and porous brick, aluminum foil and so forth. Half-brick and one-brick thick panels with effective insulation materials have been developed by research organizations and are being tested in 1958.

32. Fully prefabricated housing regardless of methods used in the manufacturing of their elements fall within two groups:

1. Single-story and multi-story precast concrete buildings made of large concrete blocks or large size wall panels.

2. Single or two-storey standard frame or panel prefabricated wooden houses.

In turn large prefabricated panel buildings are divided into buildings with or without structural frame.

*Or, in western terms, site prefabrication (Ed.)

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33. Large block and large panel construction. Mr. Alabian reported that the development of housing construction and lowering of building costs was believed to be bound up with a radical transition to the use of large prefabricated block construction and especially of large prefabricated panels. It is with this in mind that the Soviet Government has decided on a wide development of these techniques. By 1960, it is proposed to increase the share of fully prefabricated buildings to at least 14.5 percent.

34. Many interesting features have been revealed during the construction of several blocks in Novye Cheryomushki, Moscow's Southwestern District. There, in block No. 12, all houses are being built of large blocks. This block consists of 16 identical five-storey 60-flat apartment houses and may be regarded as the beginning of mass prefabricated block construction of dwelling houses in Moscow.

35. Work on this project is characterized by a very high degree of industrialization. Every possible element of the houses is prefabricated. Foundations and basement walls consist of large concrete blocks; bearing walls of the superstructure are made up of two rows of similar blocks per floor; floor elements consists of large hollow-core slabs; partition panels, the size of a room, are made of plaster concrete; staircase and landings are of prefabricated reinforced concrete, and large panels form the roof, over which several layers of roofing felt are laid; the heating and internal sanitary piping are within concrete panels.

36. Comparative data, obtained as a result of experimental construction of 16 64-flat apartment houses with different structural schemes completed in block No. 9 of Novye Cheryomushki, are listed below.

Structures	Erection Time (days)	Labor (man's days for cu. meter of building)
1. Brick	126	0.9 - 1.05
2. Masonry block	112	0.7 - 0.9
3. Large slag concrete blocks	105	0.6 - 0.7
4. Large panels	90	0.5 - 0.6

37. This comparison shows that the erection time necessary for the completion of a large-panel building are 28.5 percent lower than for a similar house and that labour requirements have been cut by 40 - 45 percent. Houses built of large blocks or panel constructions are also more economical than brick. It is interesting to note, further, that in the last three years structural engineers, architects and construction men have greatly improved large panel buildings and reduced their weight. Thus the weight of an experimental building completed in 1957 was only 1,150 kilograms per sq. meter of net floor area (approx. 2500 pounds per 10 sq. feet), whereas the weight of similar houses completed in 1954 reached over 2,500 kilograms per sq. meter (approx. 5500 pounds per 10 sq. feet).

38. The manufacture of precast reinforced concrete elements by a laminating process is the latest achievement of Soviet engineering. This method was developed on the basis of a similar process used in the manufacturing of large size plaster concrete partition panels.

39. The following table of the comparative data regarding the weights of one sq. meter of different types of walls gives an idea of the effect which these panels will have on the reduction of the total weight of the building.

Weight of 1 sq. meter (approx 10 sq. ft) of external wall

Masonry, 2 bricks thick	850-900 kgm.	(1900 lbs)
Slag-concrete 500 mm thick	800 kgm.	(1750 lbs)
Expanded clay concrete	300 kgm.	(650 lbs)
Laminated concrete panels	210 kgm.	(450 lbs)

40. This laminating process signifies a new stage in the industrialization of housing construction. Another building technique consists in the use of large prefabricated masonry blocks. This technique is being applied in many Soviet towns and has also been successfully introduced in Czechoslovakia.

41. Prefabricated Wooden Houses. Construction of one, two or four-flat prefabricated wooden apartment houses occupies an important place in industrialized building. In the USSR, the industry of prefabricated wooden houses was created during the preceding five year plans. It has helped to solve the important problem

of providing dwellings for the hundred of thousands of workers who undertook the development of virgin lands, the construction of large hydro-electric plants, and the creation of new state farms and workers settlements.

42. In contrast to previous years, prefabricated houses are mainly to be sold to the population. In 1957 about 150,000 houses were made available, and by 1961 there should be more than 500,000. In this sphere Soviet architects and builders have still much to learn from their Scandinavian and American colleagues.

43. MAIN PROBLEMS DEVELOPED BY RESEARCH INSTITUTES. The part played by research institutes in solving the housing problem and the importance of technical information to the building trade cannot be overestimated. The importance attributed to scientific research in the USSR is widely known. In 1957 the army of Soviet scientific workers numbered more than 257,000, among whom more than 96,000 had D.Sc. or M.Sc. degrees. The Academy of Building and Architecture of the USSR is the largest research center for construction in the country and employs more than 8000 research workers.

44. The Academy of Building and Architecture carried out large-scale research on site planning and town planning, including work on remodelling existing towns, the construction of the new ones, and the planning of new housing estates, both rural and industrial. Public utilities, transportation problems, parks and open spaces, all fall within the scope of these investigations. Working in close cooperation with designing and contracting organizations, the Academy pursues its studies on economic types of buildings, drafts new building standards and regulations, investigates highly efficient lightweight structures and testing techniques, studies new building and finishing materials as well as pertinent production methods.

45. INDUSTRIALIZATION OF BUILDING AND TOWN PLANNING PROBLEMS. The first and the most important manner in which industrialization affects town planning is the necessity for construction work to be carried out in large concentrated developments and for the size of residential districts and blocks to be increased. It is only through comprehensive planning of large housing estates that the correct siting of theatres, cinemas, club houses, stadiums, schools, as well as public gardens, play grounds and green spaces can be achieved.

46. Another closely connected factor is the architectural aspect of districts and urban areas as a whole, with the manifold repetition of standard houses or parts and elements thereof. Certain reports mention the danger of monotony arising from the introduction of standard designs. It must be admitted that such danger does exist if unjustified repetition of standard types is coupled with an ultra-utilitarian and functionalist approach to the problem.

47. The use of standard designs in mass developments requires an entirely new architectural approach. The contemporary architect must first and foremost be a town planner. Each of his creations should not be viewed separately, but in connection with all the social, technical, economic and aesthetic factors and town planning requirements.

48. It should be noted that the features of landscape and topography of the areas being built up, their significance and location in the town, can always lead to individual solutions, characteristic only for the given district. Thus, for instance, in Moscow the development of the Khimki district has been noticeably influenced by the vicinity of a vast artificial lake and by the picturesque and diversified landscape of the environs.

49. The necessity of using simple forms and volumes in order to increase the effectiveness of industrial methods constitutes the third factor which influences the architectural aspects of the modern dwelling house.

50. Finally, industrialization of building can lead to substantial improvement in the quality of dwellings permitting more conveniences to be provided in mass housing as well as more comfort and better finishing. This is achieved through the mass production of finishing materials and sanitary fixtures, which reduces their cost.

51. The modern architect, who has at this disposal a limited number of standardized buildings and unified structural details, may be compared to a chess player who, with a very small number of chessmen on his board, possesses a practically unlimited possibility of variation, his game always finding newer and better combinations. The architectural composition of large housing developments has not been impoverished by a limited number of standard buildings. Quite to the contrary; this has intensified its aesthetic expressiveness.

Orleans, Leo A.,
THE RECENT GROWTH OF CHINA'S URBAN POPULATION
Geographical Review, January, 1959. pp. 43-57
77.134 : 312 (51)

1. This is an analysis of the first modern population census of China which was taken by the Communist regime on June 30, 1953. Mr. Orleans is a senior research analyst in the Reference Department of the Library of Congress, Washington, D.C. This article provides additional information in relation to the paper on town planning in China, published in the May 1959, EKISTICS.

2. China has always been a country of moving peoples. Floods, droughts, and wars have set people in motion in search of food, work, and safety, which they generally attempted to find in the already congested cities. To some extent the new waves of migrants under the Communist continue this vain search. However, the explicit determination of the Communist government to changing the traditional Chinese way of life has added new forces and new motives to the basic drives. By extensive rural reforms that uprooted large numbers of peasants, and by a program of rapid industrialization, the Communist regime has created a serious problem of cities overflowing with human beings who are unable to find either work or shelter, and thus further strain the struggling economy of the People's Republic of China.

3. The Communist census-registration in 1953 listed 77.3 million Chinese residing in the urban areas of China. Although they constitute one of the world's largest urban agglomerations; in relation to the total number of inhabitants of mainland China the figure implies a low rate of urbanization: 13.3 percent.

4. Most countries estaolish urban areas on the basis of population concentration. Some distinguish between urban and rural communities on the basis of types of local government, administrative decisions, or the major occupations of the inhabitants. The two extremes are Iceland and Japan. In Iceland and urban community may contain as few as 300 people; in Japan a city (shi) must have at least 30,000 inhabitants, and usually has 50,000 or over. The significance of definition is made clear by considering the situation in Japan: the urban population defines as the population of incorporated cities was 39 percent of the total population in 1950; if, however, the "urban" population is defined as all people living in civil divisions of 5000 or more, 75 per cent of the total population of Japan was "urban."

5. Since the publication of the results of the 1953 census of China, the twentieth meeting of the State Council (November 7, 1955) established a set of criteria for defining urban population. This new definiton of "urban" was closely patterned after the definition used in the Soviet Union. Briefly, any area meeting any one or all of the following criteria was to be considered urban:

1. Seat of the municipal people's committee or people's committee above the hsien (county) level;

2. A resident population of 2000 or more of whom 50 per cent or more are non-agricultural;

3. A resident population between 1000 and 2000 of whom 75 percent are non-agricultural.

6. There is no evidence that these criteria are in fact being used by the Chinese government. In the first place, the use of this definition would undoubtedly inflate the size of the urban population to such an extent that it would be readily apparent in the reported statistics. In the second place, it seems highly doubtful whether the Chinese have the necessary data. The census did not, nor do the current registration statistics, collect data on occupations.

7. It was not until June of 1957 that a detailed analysis of the urban-rural distribution of the population of China was published in a Statistical Bulletin in China. It presented the total, urban, and rural populations of mainland China, for all years from 1949 through 1956. The figures reveal that the urban population increased rapidly in the early years of the Communist regime: from 10.60 per cent in 1949 to 13.21 per cent in 1953 (an increase of 35 percent). After 1953 the urban percentage continued to increase but at a much more modest rate (15 percent).

8. The validity of this material is questioned in terms of the techniques used, and a further commentary may be derived by calculating the implied number of rural-to urban migrants. The more than 50 percent increase in urban population between 1949 and 1956 is attributable to two factors: natural increase, and an excess of migrants to cities over those leaving cities. Under the assumption that the natural increase of the urban population would tend to be about the same as the natural increase of the total population, the implied net migration to urban centers may be derived as a series of residual quantities. For example, based on the reported 1.9 per cent of natural increase for 1949, the expectable urban population in 1950 would be 58.8 million, as compared with the reported urban population of 61.7 million; the difference of 3 million is interpreted as an expression of net urban migration.

9. Altogether, the implied migratory balance amounts to almost 21 million, or about 30 per cent of the mean urban population for the period. If these figures are correct, 3 out of every 10 urban inhabitants were migrants who came into cities between 1949 and 1956. This implied net urban migration seems to be an exaggeration. Additional light may be shed on the statistics by examining certain unique problems and forces that affect urban growth in China.

Orleans, Leo A. The recent growth of China's urban population --3

10. The two most powerful forces that have promoted urban growth in Communist China have been the pull exerted by industrialization in the cities and the push applied by ruthlessly enforced collectivization in the country. Both forces have worked in the same direction--siphoning millions of peasants from the rural areas into the cities.

11. The upheaval in the rural areas set in motion millions of peasants, who became drawn to the cities by intensive propaganda glorifying the role of the industrial worker. A large part of the urban growth that may be expected as a result of economic growth will probably occur in the industrialization of smaller towns and the building of new industrial centers. This policy, already in effect, has certainly resulted in some urban growth, though in view of serious obstacles the growth is not likely to be important in absolute numbers.

12. Not all the cities grew as a result of the in-migration from the rural areas. The shortage of skilled manpower has caused a large part of the urban growth that has taken place in the interior and in certain of the older industrial centers to come about through urban-to-urban rather than rural-to-urban migration.

13. The combined effect of these various factors has been aptly described in Chinese journals and newspapers as a "blind infiltration" of peasants into the cities. The Communists were quick to realize the danger in this movement and in March of 1953, the Ministries of Internal Affairs and Labor jointly issued a directive calling for a halt to the "blind influx" of peasants into cities. Government efforts to return peasants to the villages from which they had come are described in reports from Shanghai: "From April to October, 1955, there were mobilized a total of 555,000 persons for return to the rural areas." The immediate goal was to evacuate one million persons from Shanghai alone. Numerous reports describe similar efforts in other large cities. However, attempts to halt migration by means of legislation often fail, and modern China, so far, appears to have offered no exception. Migration to cities slowed down, but it did not stop, and the officials in Peking continued to express concern over the growth of what the Communist term the "non-productive elements" in the cities.

14. In addition to forced evacuation from many of the large cities, there seems to be some desire, particularly among the newer members of the urban working class, to return to the villages. Reports indicate that, partly owing to the hardships which no doubt also exist in the old industrial centers and perhaps also to disenchantment over the presumed glorious task of developing the industrial economy, many persons now working in factories are requesting permission to return to the farm.

15. The movement of population from urban to rural areas has also been given some impetus by the concentrated efforts of the leaders to develop and settle new lands in the northern and western parts of the country. This policy was devised to increase

agricultural production, to relieve the densely settled areas to excess population, and to provide a dumping ground for urban unemployed. Between 1949 and 1956 almost 600,000 people were resettled in regions of new agricultural development.

16. The critical deterrent to rapid urbanization of China is economic, and is to be found in the nature of the cities themselves. Originating historically as centers of administrative control and of trade, Chinese cities lacked the capital investment funds and the expansible core of skilled artisans necessary for industrial development. Under the Communist regime, the accumulation of funds and their investment in industrial construction have been pursued at the expense of consumer and peasant, with modest amounts of help from the outside.

17. The large surplus of unskilled manpower and the backlog of urban unemployed have seriously hampered the regime's industrial program by placing a heavy drain on the urban economy. The difficulty of the Chinese economy in absorbing even semi-educated (but not technically skilled) persons is reflected in numerous reports of students leaving school and returning to work on the farms.

18. There is also the simple fact that public housing and utilities have lagged far behind industrial construction in the urban areas. That money will be found and invested to improve the living conditions of the population at the expense of industrial development is extremely unlikely. Thus additional limits are set on the rate of urban growth.

19. The factors that promoted urbanization in the years 1949-1957 will undoubtedly continue to operate in the future:

1. Industrialization and an accompanying influx of rural in-migrants to the cities;

2. The construction of new industrial towns in the interior; and

3. Natural increase.

On the other hand, the factors militating against rapid urbanization will also continue to operate. In addition to the new registration law, the shortages of capital investment and equipment and the lack of a technically skilled labor force will go on plaguing the Chinese. The average annual increase of four million for the urban population between 1956 and 1965 appears to be maximal, and will surely offer the utmost challenge to the expansion of the urban economy. It may be concluded, that, considering not only China's present state of development but also its potentialities, the balance between urban and rural populations will remain virtually constant for several decades, despite an accelerated program of industrialization.

THE DEVELOPMENT OF THE KORANGI AREA

Prepared for the Government of Pakistan, Ministry of Rehabilitation.

Doxiadis Associates

THE DEVELOPMENT OF THE KORANGI AREA, Karachi, Pakistan.

INTRODUCTION

1. The subject of this report was the project for the urban development of the Korangi area in the neighbourhood of Karachi, which was put in hand by the Ministry of Rehabilitation in December 1958.

2. The object of the report was to obtain both the approval in principle of the overall project and the approval of the programmes for the first and second stages. This objective was achieved.

3. Korangi is an independent area where a housing scheme could be planned even before the general plan of Karachi was completely studied.

4. The area of the Korangi project was defined by the Malir river to the North and West, by the sea to the South, while towards the East it includes all existing settlements till the non-developed areas in order to prevent any problem arising during future expansion towards this direction.

5. When Doxiadis Associates were invited to render their consulting services for the development of the Korangi area this project, as originally planned by the Karachi Development Authority, was already in full process of development.

6. In accordance with the plans, 15,000 identical house nuclei split up into uniform typical units of 900 houses each, had been scheduled for completion by 30th June, 1959, and many of them were already under construction.

7. This was the first bold drive undertaken by the Pakistan Government for an effective solution of the refugee problem at Karachi.

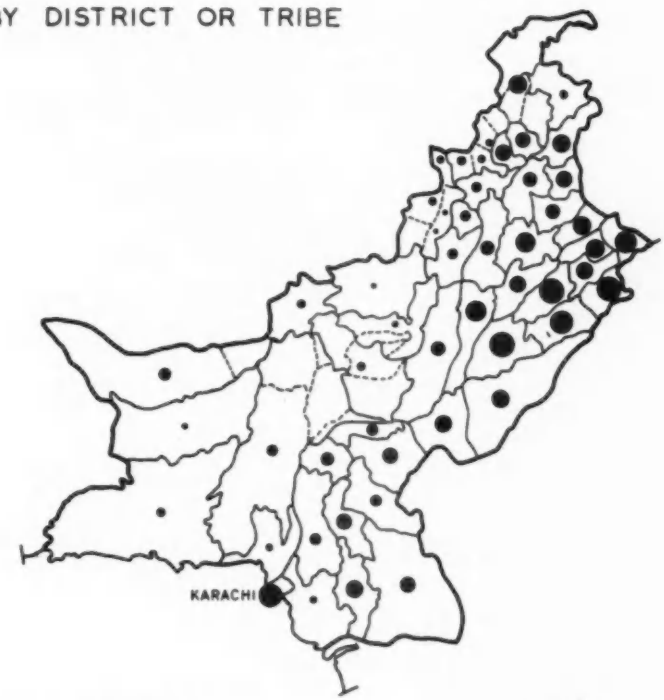
8. On taking up their duties, the first suggestion which Doxiadis Associates made was that the Korangi operation should not be approached as an isolated effort for the housing of a certain number of refugees but as a long-term and many-sided program whose aim would be:

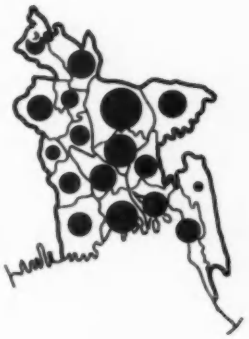
a. To accommodate successively far greater numbers, not only of refugees, thereby bringing about the necessary social integration of the population from the point of view of origin, income, profession, etc.

b. To build up a self-contained city of about 500,000 inhabitants, with all the necessary functions of a modern city, save those top level functions which can only be maintained by a city of the order of Karachi. This

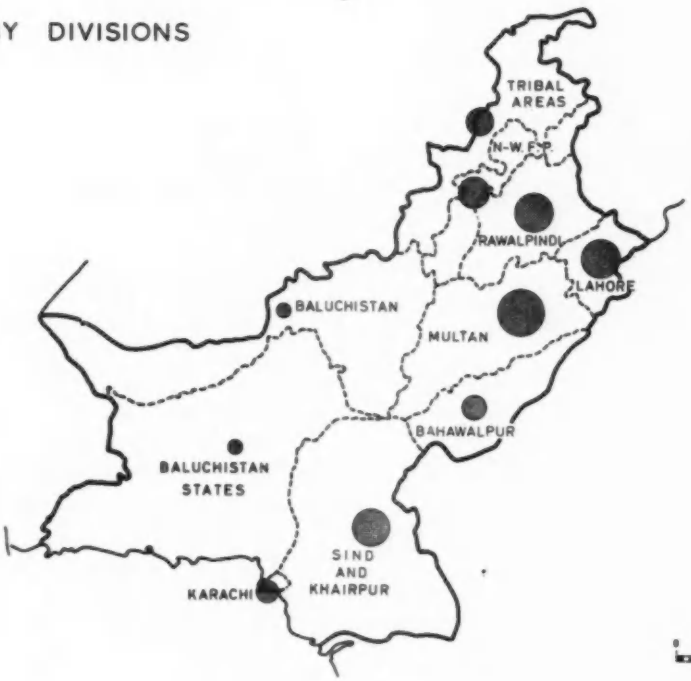
DISTRIBUTION OF THE TOTAL POPULATION OF PAKISTAN

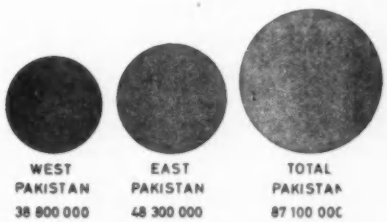
BY DISTRICT OR TRIBE





BY DIVISIONS





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was the only practical course to follow in order to halt the endless extension of the city of Karachi round the central nucleus of the functions of the old city which raises more and more problems for the inhabitants with each passing day.

c. To present to the nation a large experimental and educational centre where methods would be tested and personnel trained to provide in future the best solutions for the country's housing problem on a nation-wide scale. As soon as this policy was in principle accepted by the Pakistan Government, Doxiadis Associates went immediately forward with the drawing of the first master plans of the Korangi area with a view to catching up with the operations under way and achieving the integration of the houses under construction within the framework of the city of tomorrow.

Karachi

9. Karachi, the Federal Capital of Pakistan, is situated at the Delta of the Hindus river in the Sind province, about 500 miles from the most densely populated area on the Punjab and 1500 miles from East Pakistan.

10. Two maps indicate the present distribution of the population. At the 1951 Population Census, the most important centers (population over 100,000), were Karachi, Lahore, Hyderabad, Rawalpindi, Multan, Lyallpur, Sialkot, Peshawar and Gujranwala in West Pakistan and Dacca and Chittagong in East Pakistan. This picture has considerably changed since 1951. The present population of Greater Karachi is estimated to be well over the figure of 2 million people, approximately double its 1951 total.

11. Karachi is connected with the principal urban centers of West Pakistan by a road network, the main arteries of which run northwards parallel to the Hindus river.

12. Karachi is also the terminus of the broad-gauge railway network of West Pakistan linking the towns of Hyderabad, Khairpur, Bahawalpur, Lahore, Peshawar etc.

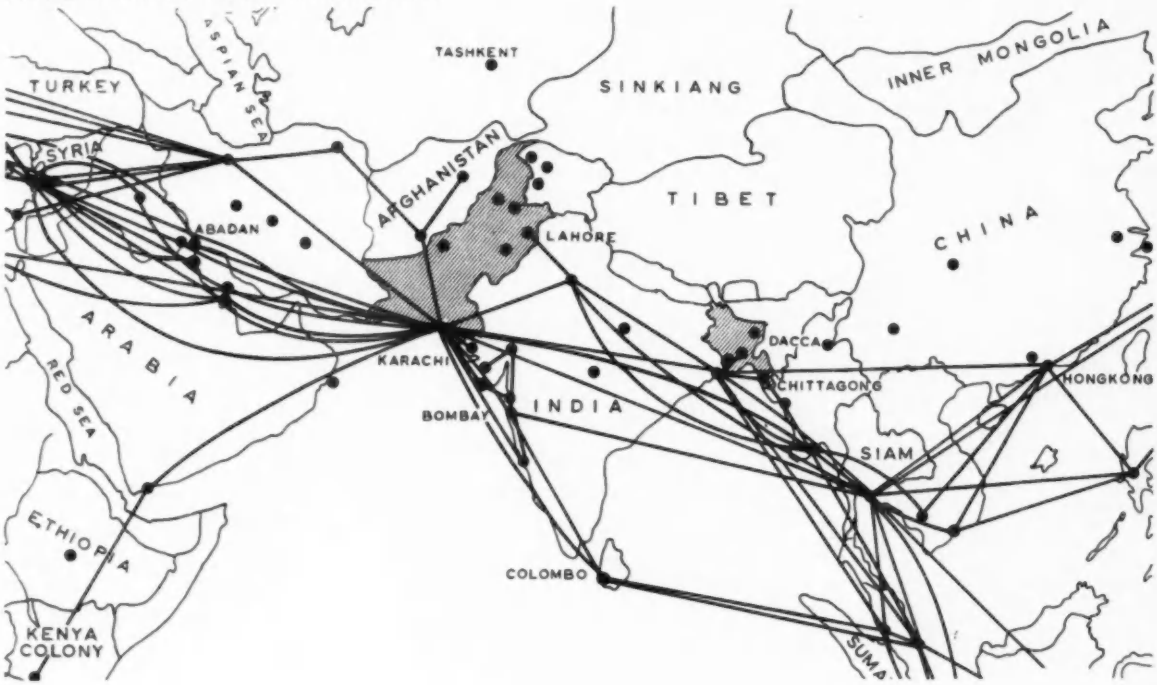
13. Karachi is one of the most important junctions for air traffic between Asia and Europe and the nearest port serving the export trade of Afghanistan, Rajputana and Kashmir.

Historical Background

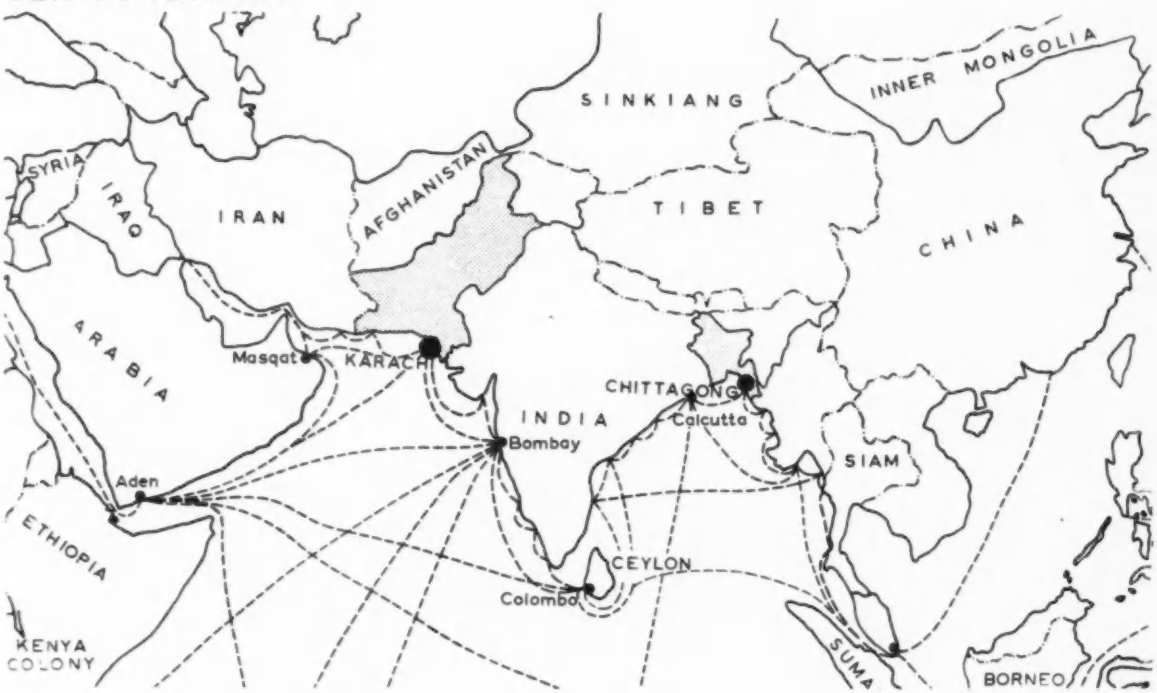
14. Originally a fishing village (18th century), later an organized harbour connected with the Hindus basin through the railway, (end of 19th century), then a major port and international air communication center as well as the capital of Pakistan with about

MAIN COMMUNICATION LINES

INTERNATIONAL AIRLINES



SEA WATERWAYS



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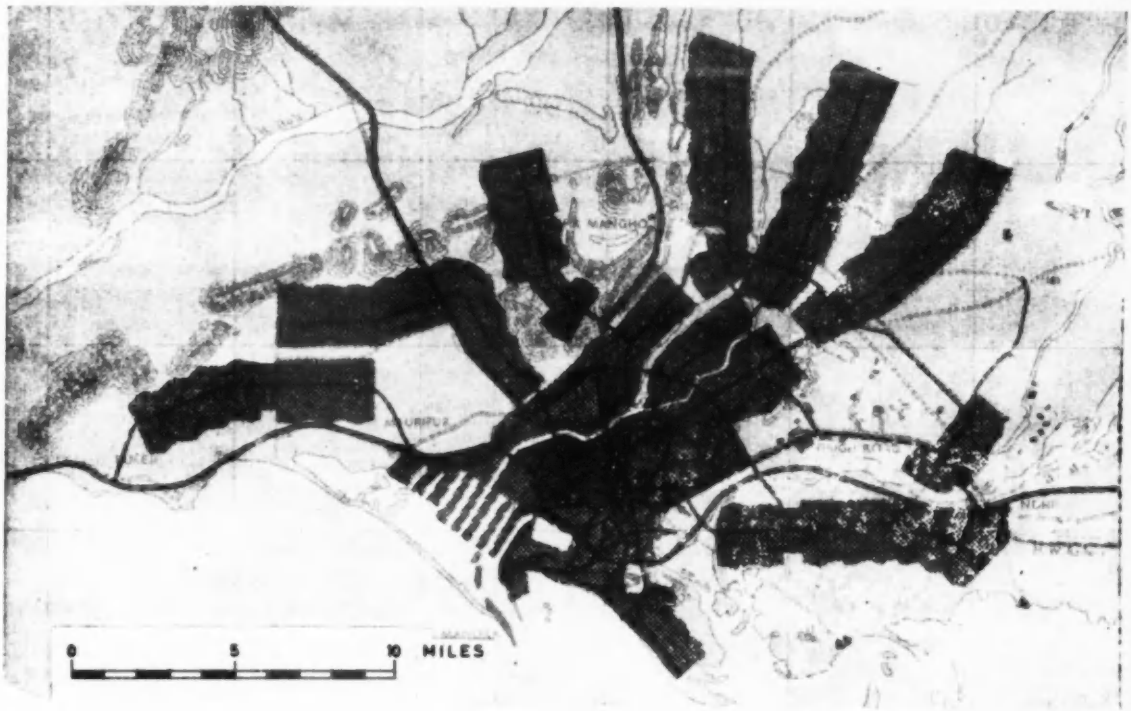
450,000 inhabitants (1941), Karachi has developed into a continuously growing metropolitan city. The migration of three quarters of a million of Muslims from India, which started in 1947 and is still going on, is accompanied by industrialization and by the general urbanization trend, moving important parts of the population from the rural areas towards the urban centers.

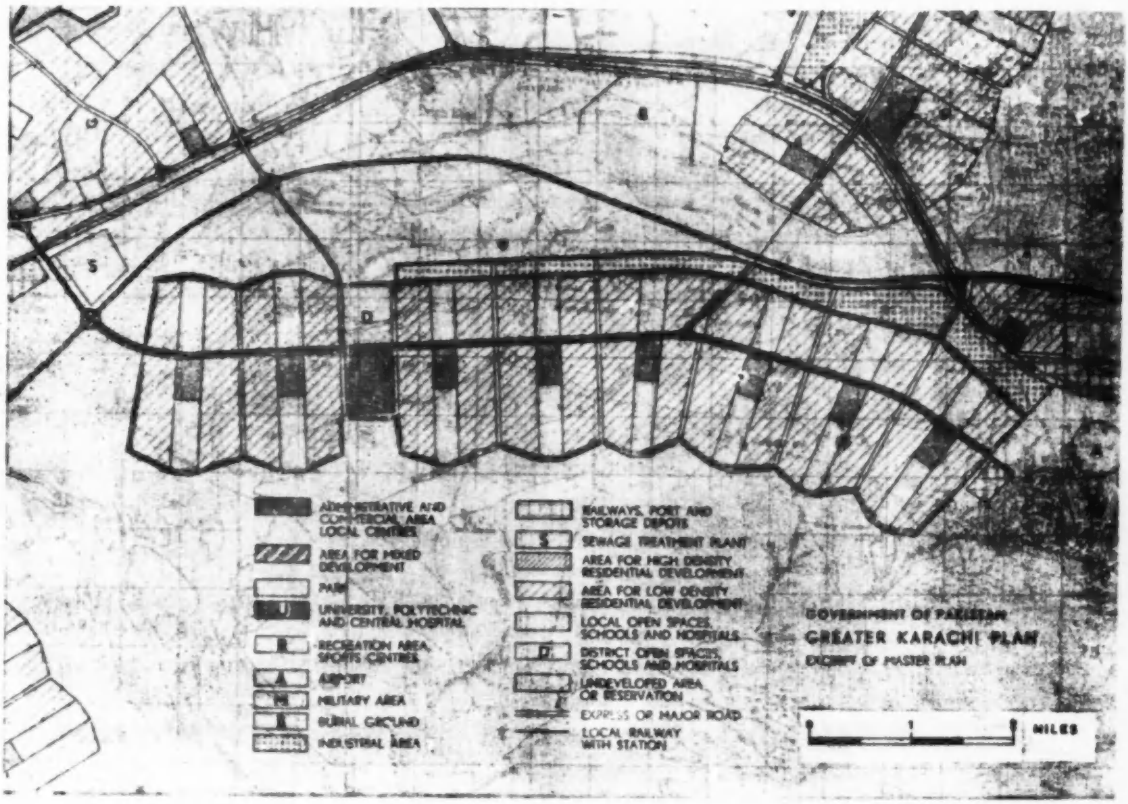
15. To prevent any haphazard development on the one hand, and so as to systematically regulate the land use and plan the future development of the city on the other, the preparation of a Master Plan was assigned in 1949 to a Town Planning Firm, the Merz Rendel Watten (Pakistan). This plan was submitted to the Pakistani authorities in 1951 but no official sanctioning has taken place up to now. By providing for the general zoning areas and determining the main rights of way for the road networks, the plan was of considerable help.

16. Since 1951 new conditions have been created and extremely important factors have now to be taken into account. No Master Plan can determine for ever the rules of a city's development if-not revised, adjusted and even altered in its details, according to the special data and the corresponding problems of each moment. The time factor constitutes the fourth dimension of any Master Plan and this must be taken into consideration when determining any realistic planning work.

17. The whole subject therefore should be reconsidered and the Plan should either be revised or restudied in the light of the above. It should be pointed out that the Master Plan is not in itself sufficient to solve the problems of a city and regulate its future development. What is needed most of all is a long-term Master Program. The former will control the physical expansions of the city in terms of three dimensions and the latter will introduce the fourth dimension: time. It will study the future size and contours of the city and will ensure that its development is coordinated with the national development program in accordance with the possibilities of mobilizing government and private resources.

THE M.R.V.P. PLAN





THE PROBLEMS

Problems of housing

18. The increase of the population. Between 1901 and 1951 the population of Karachi increased from 136,000 to 1,126,000. The city is at present estimated to have a population of over 2,000,000. The present annual rate of increase is around 5%. Thus by 1966, i.e. in no more than 7 years, Karachi is expected to have a population of 2,800,000.

19. In 1959 a large part of the population of Karachi was living in overcrowded houses and 119,000 families were accommodated on pavements, streets and other open spaces. Though new housing schemes have been created during the last years (Lyari, Landhi etc), the housing problems still remain extremely acute.

20. In 1959 a total of 119,402 homeless families were recorded, amounting to a total of 527,535 persons, or an average of 4.2 persons to a family. A certain number of married persons are, however, living without their families who have remained in the interior, and it is therefore considered that the more correct figure will be an average of 5 persons to a family. The homeless families are divided into 214 different groups located in various parts of the city, 84 of which comprise over 250 families.

21. Under these circumstances the lack of community and public buildings for administration, education, health and recreation is not surprising, considering that even in the new housing schemes such buildings have been only partially planned and implemented.

22. The existing settlements and industrial establishments within the area which impose limitations and do not permit a free development of the Korangi area are:

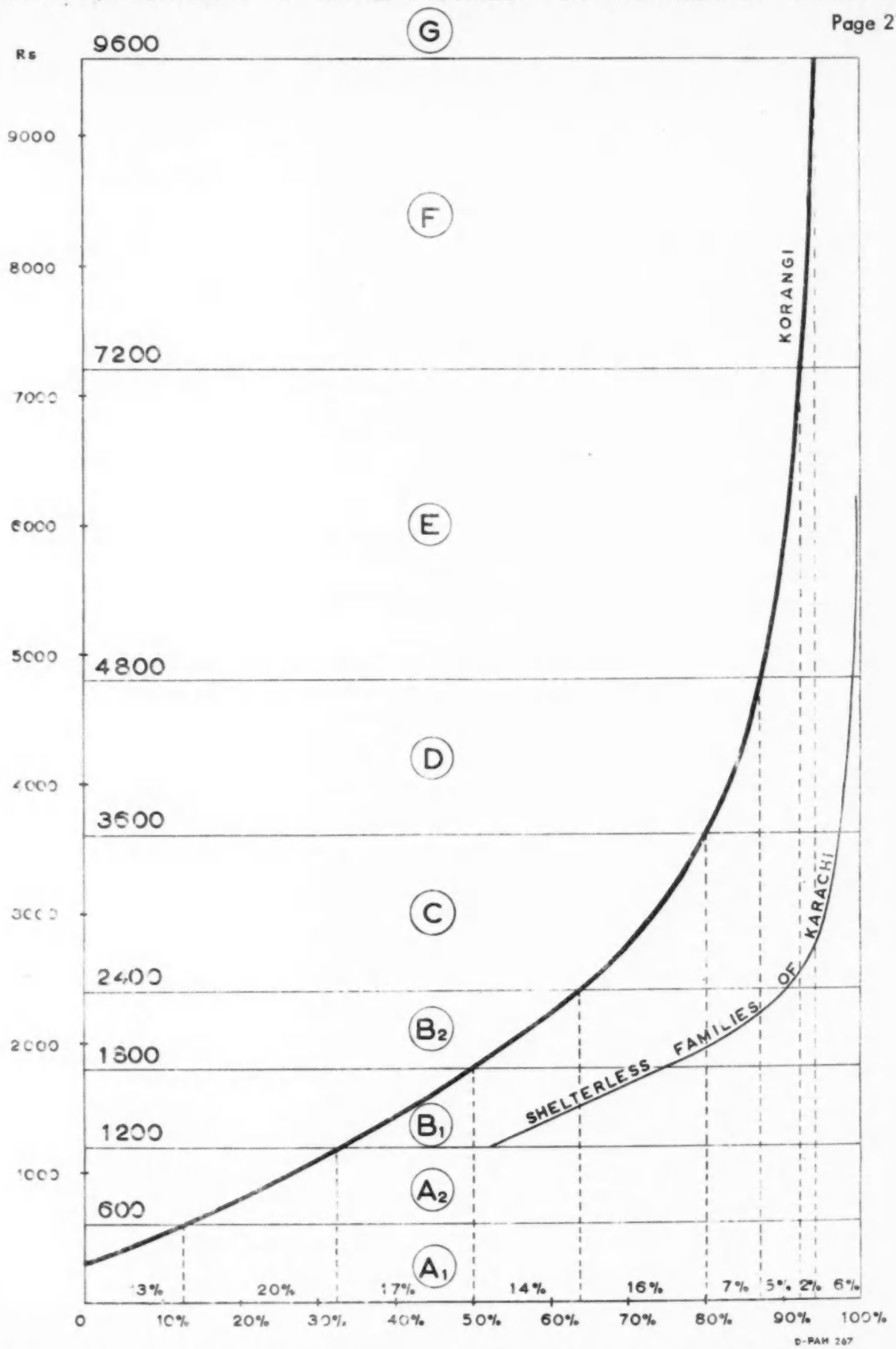
a. The Landhi Refugee Colony, which is neither integrated nor completed and can be reformed.

b. The fact that the 15,000 houses of the Korangi Rehabilitation Scheme are already under implementation. Their construction started in December 1958.

c. The Landhi Industrial Estate with large industrial establishments, installations of radio station, etc. In the same area there are a few housing settlements. Some are properly planned and built, but the remaining simple barracks impose considerable limitations.

23. The shortage of Pakistani architects and town planners is embarrassingly acute. The total number of architects in Pakistan is about 40. There are only two town-planners available in Karachi. In these circumstances the needs of the country for

INDICATIVE BREAKDOWN OF FAMILY INCOMES FOR THE AREA OF KORANGI



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specialists to work on ekistic projects can readily be appreciated. Although there are more civil engineers than architects their number is still totally inadequate for the needs.

Problems of economic prosperity

24. The index of employment among homeless families is on the whole satisfactory. Most of those who are fit for work are employed. About 50% of the employed persons work at places over 2 kilometres away from their homes.

25. Taking into consideration the results of the recent " Survey of Shelterless Persons in Karachi" by Lt. Col. Nazir Ahmed, the average per capita income for the country as a whole, and the available data on employment in Karachi, the following indicative breakdown by income group was assumed for the families of the whole Korangi area: i.e. Group A numbers a third of the population and groups B and C almost a half.

Incomes Group	Annual Income in Rs*	Percentage Breakdown
A1	up to 600	13%
A2	600 - 1200	20%
B1	1200 - 1800	17%
B2	1800 - 2400	14%
C	2400 - 3600	16%
D	3600 - 4800	7%
E	4800 - 7200	5%
F	7200 - 9600	2%
G	9600 and over	6%

Problems of public health

26. Water and electicity supply, as well as roads and sewerage, constitute the third category of main problems faced by the city. In site of the works achieved in this field since 1942, conditions have become worse: 18 gallons of water per capita daily in 1958 against 24 gallons in 1953. However, new schemes are under way for both water supply and sewerage in order to ameliorate the present situation.

Problems of communications

27. From the communication point of view the only important element to be respected is the existing railway. The roads crossing the Korangi area are the ones upon which one has to rely at present, and they must therefore be taken into consideration at least for the immediate future.

1 Rs = 21 cents (US)

THE POLICIES

Future function and population of the Korangi area

28. It must be noted that the Korangi area project constitutes a many-sided program which aims at:

a. Accommodating about 500,000 persons of various income groups, in a self-containing community rationally planned within the wider Karachi area and containing all necessary functions.

b. Presenting a large experimental and educational centre where methods will be tested and personnel trained, with the intention of providing in future the best solution to the country's ekistic problems.

29. The preliminary Master Plan should regulate the use of land throughout the Korangi area and lay down the sectors intended for the four basic functions: habitation, work, recreation and circulation.

30. The basic principles to be observed in the preparation of the programme are the following:

a. that the settlement will be independent as far as all the basic functions are concerned. This also applies to providing opportunities of employment to its inhabitants, which is one of its most important functions. It is a basic principle of the programme that Korangi should become an independent area in which the working population, or at least the lower income groups of the working population, are provided with employment. This is necessary because when movement involves transport by any means other than the bicycle it is costly both in time and money. Korangi should therefore be developed not simply as a residential settlement but as a fully integrated community in which all the needs and functions of daily life are provided for, including trade, industry education, hospitals, parks, athletic and physical training centers, etc. This will ensure the population a full and normal life on a sound economic basis. Only those of the people who can afford to do so will leave the settlement by private car or public transport.

b. that it will not only accommodate persons at present homeless in Karachi (i.e. families in the lowest income groups) but families in all income groups and occupational classes, in proportion to the present composition of the population of Karachi and to the needs arising from it. Specialised settlements always prove a failure both socially and economically. It is necessary for the new communities to include people of all income groups and

and occupational classes in order to prevent the communities from being labelled " poor districts" and condemned to stagnation. It is also necessary in order to enable each trade or occupational class to be of service to the other trades and occupational classes.

c. that the families to be housed will themselves contribute to the housing effort through the application of various self-help methods, or the building of nuclei of houses only, to be completed later by the occupants, or the provision of plots of land on which the people will build houses themselves.

d. that the beneficiaries will pay fully for the housing facilities provided to them by the government, on a long-term installment basis. The houses, etc., supplied will therefore be appropriate to the income of the families for which they are intended. An exception may only be considered for the lowest income groups which will not be able to pay the total cost of even the most elementary facilities. In this case part of the cost will be borne by the government as a subsidy to the beneficiaries.

e. an effort will be made to provide more than one solution for each income group to allow the people some degree of choice. Preference will, however, be given to the solutions best suited to the needs and financial resources of the beneficiaries. For example, for the very low income groups provision has largely been made for nuclei of houses, or small plots and building materials with which people can build their own houses. In the case of the higher income groups it will be sufficient to provide appropriately situated developed plots, i.e. plots supplied with all the necessary community facilities.

f. plots and other housing facilities for the higher income groups will be made available on the basis of the commercial value which they will acquire when the area is fully developed. In this way the government and not the private individual will benefit commercially from the development of the area. It will thus be possible to recover money which may have to be spent on subsidies while at the same time the project will yield a substantial surplus which could be used to finance major public utility schemes in Korangi. The payment of installments by the beneficiaries and the profit which the government could derive from the urban development of the area render the Korangi project on a long-term basis a self-supporting and self-financing scheme to which a government contribution will only be necessary at the outset. This contribution will grow progressively smaller and, at the end of the period for the payment of the installments most of the original capital outlay will have been recovered.

The physical development of the area

a. Roads

31. The master plan will regulate the use of the land throughout the Korangi area and lay down the sectors intended for the various functions and the road arteries which are to link these sectors to each other, to Karachi and the hinterland. The planning of these major arteries is a matter of tremendous importance, in as much as these will provide the basic frame in which the city of tomorrow can be developed. Thus the reservation of the necessary strips of land which would enable them to develop without hindrance in the future and perform their function properly is a matter of absolute necessity.

32. The main roads should be classified into grades according to their importance and relation with the community grouping. These roads which connect the capital to the region, the country and other countries, are considered as major highways, i.e. roads of the highest order. The Master Plan should provide for a network of such major highways linking the city with the other main urban centres and the airport. The most important direction in the Korangi project is east to west and two major highways will be needed to the north and south of the project area.

33. A northern highway can pass through the northern part outside all existing built-up areas, and connect the bridge on Malir river with that of Landhi. This would become a physical axis as well as a necessary communication artery. It is the natural route for the Lahore- Karachi highway to follow and the shortest road leading to Karachi through the Korangi area.

34. This highway will create a demand for installations along the road such as car service stations, car exhibitions, light industries and handicrafts. Consequently, along this axis the necessary areas should be provided for light industries and warehouses, with plots of a large size which could be divided into smaller ones, where minor handicrafts, service stations, garages etc., could be located.

35. A southern axis should also cross the area in an east west direction. This axis should be aligned so as to respect the existing houses of Landhi, and should pass south of the central built-up sector.

b. Houses and Community Equipment

36. The needs of a human settlement are not covered by the provision of houses and community services. In order to ensure its smooth functioning and to cover its various needs a considerable number of buildings with special functions must be provided such as schools, places of worship, shops, administrative buildings etc. These buildings are considered as inseparable parts of the settlement. Although their number is generally small in relation to the number of houses, their significance in serving the economic, social and spiritual life of the inhabitants

are their contribution to the future development of the settlement make them of paramount importance.

37. In residential communities up to class IV the necessary buildings can be largely determined in advance. The following are mentioned as those typically needed, but it should not be forgotten that they may be affected not only by the income of the inhabitants but also by special conditions.

a. Class II communities: Playground for children

b. Class III communities: Primary school, kindergarten and small market.

c. Class IV communities: Secondary school, place of worship, administrative centre, health centre, cultural centre, sports grounds and possibly public baths.

38. The first stage programme for the development of the Korangi area comprises the construction of:

a. 15,000 houses with one main room and auxiliary facilities for the lower income groups. These houses should be regarded as nuclei for larger houses to be built in due course by the beneficiaries themselves.

b. 1,000 two-room and 1,000 three-room houses for the next higher income groups.

c. The essential community facilities, i.e. roads, water supply, sewerage, electricity and gas supply for these houses and for the development of a further 2,000 small plots for the lower income groups and 2,000 larger for the higher income groups.

d. The essential community buildings for the whole scheme:
   21 elementary schools
   5 secondary schools
   1 250-bed hospital
   21 health centres
   21 markets each with 20 stands
   21 x 20 = 420 shops

Financial and administrative considerations

39. To ensure the realization of the Master Plan its total cost should be calculated independently of financing through private initiative, and in relation to the economy of the city and the country. Then the total cost should be compared with the antici-

pated possibilities for the mobilization of the public, private and other resources, and the Master Program and Plan checked accordingly. The estimate of cost should include all the technical works and services needed for the eventual realization of the plan plus the cost of land.

40. The estimates of all available resources should cover those to be provided by private, government and other bodies, as the total investment needed will be financed by all those parties in accordance with the importance and nature of each investment.

41. The cost of works to be carried out by the government can be classified under the following categories each of which is examined separately:

a. Cost of land

b. Cost of land development

c. Cost of the construction of houses

d. Cost of the construction of community buildings.

42. To make sure that the implementation of the program will be carried out successfully, several administrative and legislative measures should be taken ranging from land acquisition procedures to building by-laws and to the mobilization of the public interest for the city's development.

THE PROGRAMS

The Master Plan

a. Roads

43. The northern axis which will be the most basic artery for long-distance traffic and communications in the whole area should have a motorway with a final width of at least 300 feet out of which the present width could be of the order of 75 feet with a median strip. Furthermore, a green strip of 45-60 feet should be provided on each side of the central lanes so that the fast traffic will cross the area through greenery while the bordering industrial establishments will have their frontages on service roads. This main road will, at present, have a crossing at every mile, with the possibility of doubling this distance and of designing two-level crossings in the future, when vehicle speeds will probably be higher and traffic volume increased.

44. The southern axis will be located at a distance of about 1700 feet south of the present road to Landhi and will have a right of way of 200 feet.

45. Regarding the north-south direction, the main axis should be the one passing between sectors 7 and 8. It will have a right-of-way of 300 feet. This axis should be extended towards the north: its alignment beyond the Malir river and its connection with the road network of Karachi should be defined after a study of the whole plan of the city, as this will probably impose some slight realignment.

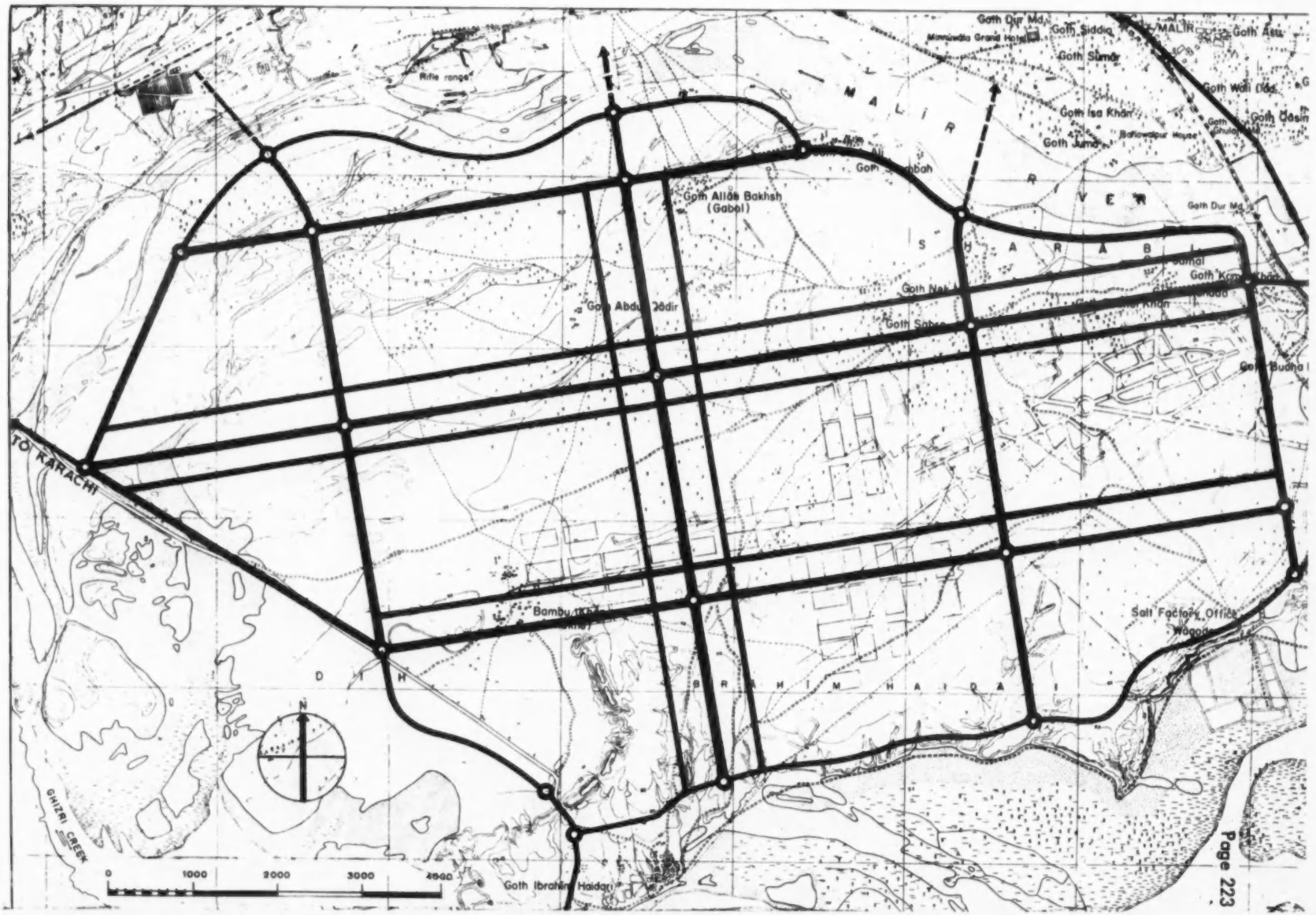
46. It is evident that the above three main axes will influence the final decisions on the alignment of the remaining ones, which will complete the basic road network of the Korangi area.

b. Zoning

47. Korangi consists of six integrated residential communities class V, each one having all community buildings required, i.e. educational, health, administration, buildings, shops etc.

48. The zoning of the area provides for all the functions which are required to serve the residential population. The plan covers an area of 94.5 million square yards broken down as follows:

MAIN ROADS


Goth Qur Md.
Goth Siddiq
MALIR
Goth Asu
Goth Sima
Goth Wali Dad
Goth Isa Khan
Goth Jumo
Goth Allah Bakhsh (Gabol)
Goth Dur Md.
Goth Abdul Qadir
Goth Nak
Goth Sabir
Goth Kam
Goth Budha
TO KARACHI
Bamboo Trees
Salt Factory Office
Wagon
DHABRI
BRAHMHAJAI
N
0
1000
2000
3000
4000
GHIZRI CREEK
Goth Ibrahim Haidari

	Surface in million sq. yards	Percentage of the total
a. Residential communities	34.5	36.5
b. Civic, commercial, business areas	5.4	6.0
c. Green areas with special buildings (mixed use)	6.0	6.5
d. Special buildings and institutes	3.5	4.0
e. Irrigated lands and cultivations including residence (mixed use)	24.3	25.5
f. Light industries, workshops etc.	5.8	6.0
g. Pakistan Air Force installations	3.8	4.0
h. Major roads and parkways	11.0	11.5
	94.3	100.0

49. In addition, large parcels of land are reserved for the expansion of the existing Landhi industrial estate.

50. Along the northern artery adequate space has been reserved for the development of large plots for light industries, workshops, large showrooms etc. The importance of this road as a new highway from Karachi to Hyderabad - Lahore justified the utilization of the area along it for this purpose.

51. Areas to be occupied by major civic, commercial and business buildings as well as by recreation buildings such as cinemas, theatres, etc., have been provided along the main axis from north to south.

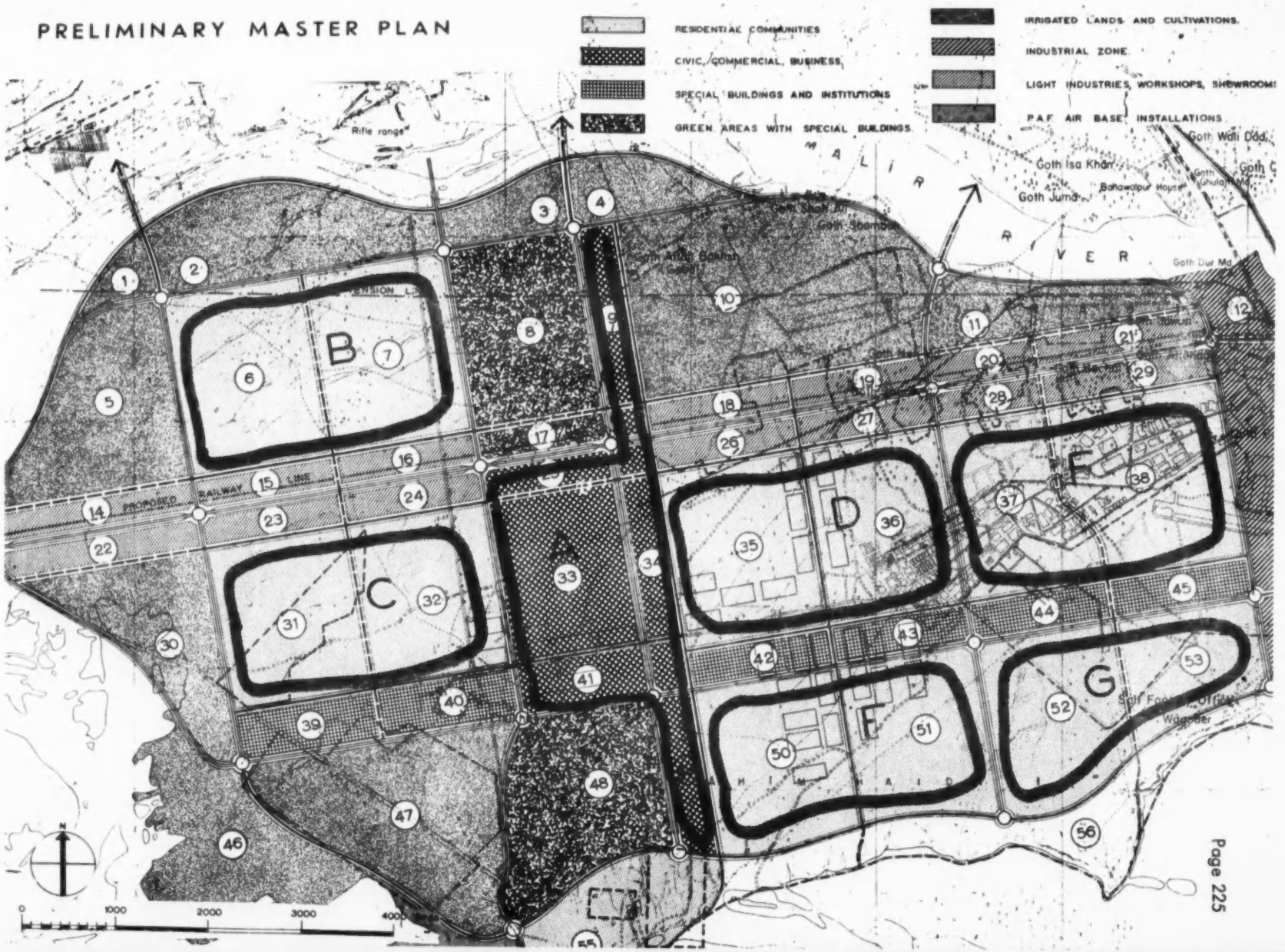
52. Along the northern side of the southern artery land has been reserved for higher order public buildings such as vocational schools, government services not needing to be in central Karachi, other civic buildings etc.

53. Certain sectors along the left bank of the Malir river have been reserved for cultivation. Some additional areas south west of Korangi may also be given over to cultivation, should the irrigation scheme of the area prove that this would be feasible. Sector 48 which includes the hills north of Goth Ibrahim Haidari should be planted and developed into the major park of the whole area. Special buildings such as hotels, recreation buildings, sports grounds etc. may be accommodated within this green area.

The first stage of development: Residential Sector D.2

54. Sector D.2 was selected as the site of the first sector to be developed by the erection of 900 new housing units. This sector, as defined by the Korangi master plan, borders in the north on the northernmost artery which crosses the city from west to east and along which it is planned that crafts and a light industry should be developed.

PRELIMINARY MASTER PLAN



Apart from the new houses to be fitted into this sector, 900 more houses already under way in accordance with the old KDA plan will fall within its borders.

55. The selection of sector D2 for the development of about 900 new houses offers the following advantages:

a. The creation of a residential community for low income families in this location is in accordance with the provision of the master plan for the distribution of income groups throughout the Korangi area. Pursuant to the master plan, the lowest income groups are to be located close to the northern artery along which light industries are to be built up and various other functions installed to assure employment within short distances from the homes of the working people.

b. The presence of the 900 houses already under construction inside the sector will ensure a total of about 1,800 houses, which is a number capable of forming a self-supporting residential community with all the facilities required by the functions of every day life.

56. The first sector to be developed will be D2. The overall dimensions of D2 between the outer building lines are 1945' x 2489'

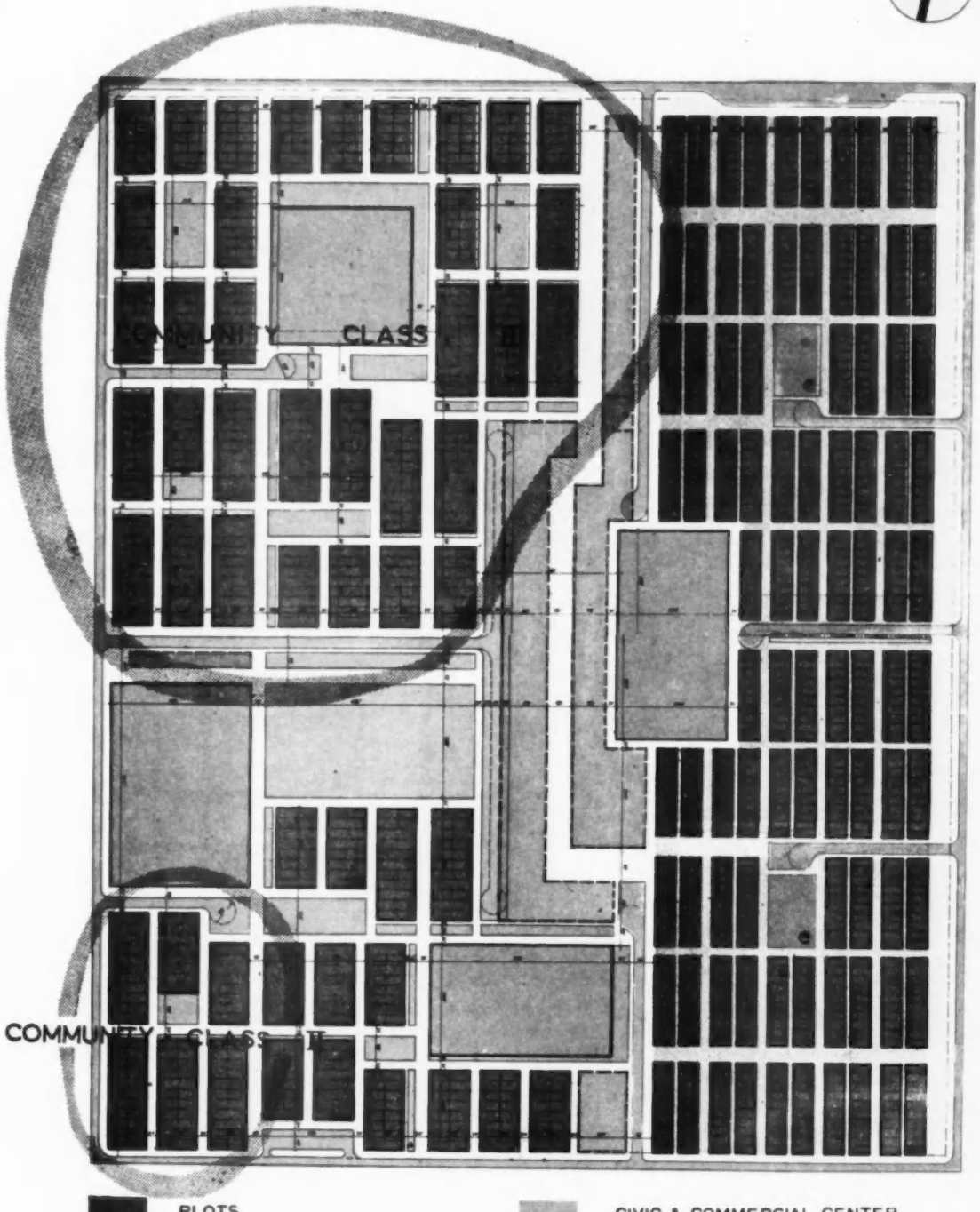
57. This community class IV is subdivided into three class III communities, each of which has a primary school as a centre of gravity.

58. In accordance with the educational system of Pakistan, and the country's family formation, 650 families correspond to each primary school. Thus in shaping the class III communities, the following distribution has been made of the 900 houses under construction and of the 922 new houses: 620 out of the houses under construction have formed the first community; 280 under construction plus 340 new houses = 620 houses have formed the second community and 582 new houses have formed the third class III community.

59. The transport requirements within the community are served by means of cul-de-sac roads running from the perimeter (where the high speed motor-ways are located, constituting the city's main road network) to the key points of the community. Thus the movement of pedestrians inside the sector is served by means of a network of pedestrian roads which is not interfered with by vehicular traffic.

60. The main inner pedestrian road crosses the community from north to south. Along this pedestrian road there are to be found the various facilities (buildings and open spaces) which cater for the main functions of the community. West of this centre of the sector lies the area of the public park and secondary school.

COMMUNITIES CLASS III AND II
SECTOR D_2



61. Another ring of main footways links between them the centres of communities class III where the schools are also situated.

62. Minor foot-paths serve as ways of access to houses from the nearest motor-road to the doorstep, only a few steps away.

63. The layout provides for all the necessary spaces required for the public buildings and facilities which will round off the life of the community.

64. The central section includes a market place and a coffee house, an administrative building, a social centre with a meeting hall, a mosque public baths and a health centre. Provision has also been made to build a small group of shops. Along the main pedestrian road and in the section thereof which borders on the light industry zone, it is planned to build a row of handicraft shops on the first floor of which the craftsmen will have their own houses.

65. The main public park and the secondary school will be located near the centre.

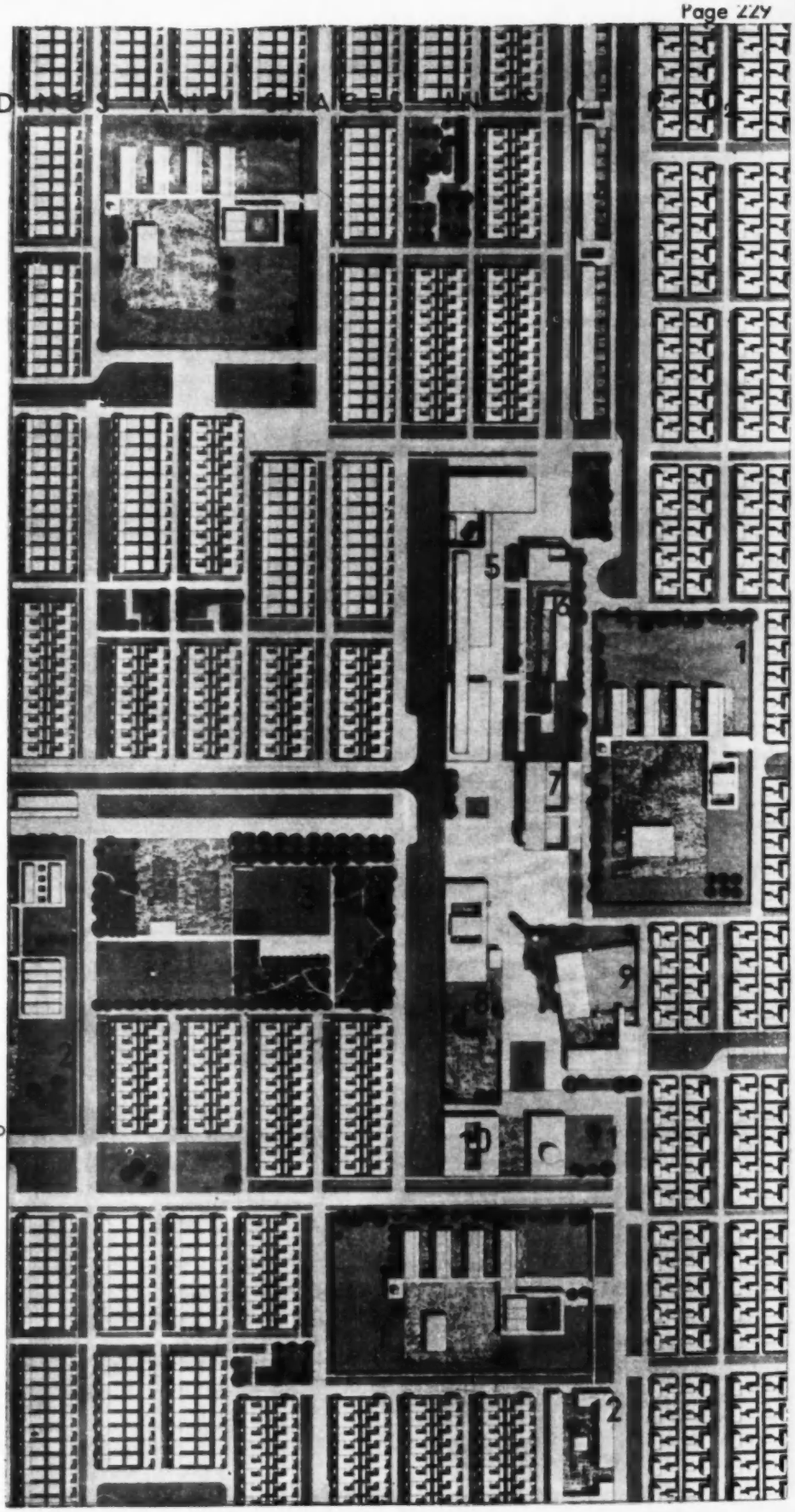
General Program of Development

66. During the first year of action the main effort should be directed towards the preparation of the Master Program and Plan of the whole Karachi area (i.e., of the community class VII) and to the simultaneous detailed study of the Korangi area (i.e. of one class VI community). This will help the authorities concerned and all those who will finance the development projects, to know how and why they should allocate funds for such and such purposes.

67. A second class VI community should be studied during the second year, while at the same time more detailed studies should be completed for the Korangi area.

68. During the third, fourth and fifth years the remaining class VI communities should be studied, whilst more detailed plans should be prepared simultaneously for the class VI communities studied during the previous years.

PUBLIC BUILDINGS AND FACILITIES



1. PRIMARY SCHOOL
2. SECONDARY SCHOOL
3. PUBLIC PARK AND PLAYGROUND
4. HANDICRAFT SHOPS
5. MARKET
6. COFFEE-SHOP
7. ADMINISTRATION
8. SOCIAL CENTER AND OPEN AIR GATHERING AREA
9. MOSQUE
10. HEALTH CENTER
11. PUBLIC BATH
12. SHOPS

Financing

69. Table I suggests the size of the plot suitable to each income group in the case of one-storey houses, as the majority of the dwellings in the Korangi area will most probably be. In addition to the area, some indicative dimensions of the plot are given for each category of income on the basis of the 4 yards modulus. It should be noted that types of houses suited to the dimensions of the plots in the table have already been designed for the lower income groups.

70. In order to estimate their cost, community facilities have been divided into two broad categories.

a. facilities in residential class IV communities.

b. facilities outside residential class IV communities, which include works for the land development of non-residential areas (industrial zone, civic, commercial and business center, etc.) and the main roads, main drains and sewers, water and electricity mains, treatment plant, pumping stations, etc., to serve the whole of the settlement.

71. Category (a) community facilities are those the proposal suggests should be paid for by the beneficiaries and which therefore, when added to the cost of purchasing the land, determine the cost of the plots to be charged.

72. To determine the cost of land purchase and land development, chargeable to urban dwellings, the following percentages resulting from the experience obtained in town planning has been accepted for a community class IV.

Area of plots for houses	50%
Area of plots for community buildings and sports grounds	15%
Area of roads, squares and communal green spaces	35%

73. In table 2 the total cost of the plots for the various income groups is given which includes the cost of land and land development. This cost was reckoned according to the areas of plots given in table I increased by 54% on the basis of the above.

74. To ensure that the house is within the means of the beneficiary and can therefore be paid on reasonable terms within a period of not more than 20 years, the total cost (that is cost of house, land and land development) should not exceed a certain ceiling, which has been estimated at approximately 2-3 times the annual income of the family for which the house is intended.

TABLE 1

AREAS AND DIMENSIONS OF PLOTS FOR ONE STOREY HOUSES

INCOME GROUP	PERCENTAGE BREAKDOWN	AVERAGE PLOT AREA IN ROUND FIGURES (SQ.YD.)	INDICATIVE DIMENSIONS OF PLOTS (SQ. YD.)	CALCULATION OF THE AVERAGE PLOT AREA (SQ. YD.)
(1)	(2)	(3)	(4)	(5) = (2) x (3)
AI	13%	100	8x12 = 96	13
A2	20%	120	8x12 = 96 8x16 = 128	24
B1	17%	140	8x16 = 128 3x20 = 160	24
B2	14%	160	8x20 = 160	22
C	16%	200	12x16 = 192	32
D	7%	240	12x20 = 240	17
E	5%	300	12x24 = 288 16x20 = 320	15
F	2%	400	16x24 = 384 16x28 = 448	8
G	6%	800	500 - 1500	48
TOTAL	100%			203

75. This figure is based on the assumption that the total cost of the house will be paid in 20 annual installments equal to the 15% of beneficiary's annual income. A 2% interest and a surcharge for housing management equal to 0.5% of the cost of the house is further assumed.

76. The expenditure to be borne by the government is as follows:

	(Crores Rs)
a. Cost of land	12
b. Cost of land development	
i. works within class IV communities	20
ii. works outside class IV communities	20
c. Cost of construction of houses	12
d. Cost of construction of buildings	
i. buildings in class IV communities	6
ii. buildings in communities of class V and special buildings	10
Total government expenditure	80

77. The total cost of the works to be constructed by the government has been estimated at Rs 80 crores. It is also expected that about Rs 27 crores will be spent by private persons in building houses on developed plots. Furthermore a substantial sum will also be spent privately in building premises for private concerns such as hotels, restaurants, garages, etc. and in constructing industrial establishments in the special industrial zone.

78. The sum of Rs 80 crores for the works to be carried out by the government could be obtained from the following sources:

a. Funds allocated to Housing and Settlements under the Development Programme.

b. The proceeds of the allotment of the various items to be provided under the programme (houses, plots, shops, plots in the industrial zone, etc.). This source also includes the proceeds to be realized from various buildings which will be originally financed out of the Housing and Settlements sector of the Development Programme but will ultimately be debited to other sectors of that Programme, or other authorities or Ministries (e.g. schools and other educational establishments will be debited to Education).

TABLE 2

STIMATED COST OF PLOTS

INCOME	SURFACE OF PLOT IN SQ. YD.			COST OF PLOT IN RS		
	OWNED PLOT	CORRESPONDING ROADS, SQUARES ETC.	TOTAL	LAND 2 RS/SQ.YD.	LAND DEVELOPMENT 7 RS/SQ.YD.	TOTAL 9 RS/SQ.YD.
(1)	(2)	(3)=54%(2)	(4)=(2)+(3)	(5)	(6)	(7)=(5)+(6)
A1	100	54	154	310	1080	1390
A2	120	65	185	370	1300	1670
B1	140	76	216	430	1510	1940
B2	160	86	246	490	1720	2210
C	200	108	308	620	2160	2780
D	240	130	370	740	2590	3330
E	300	162	462	920	3230	4150
F	400	216	616	1230	4310	5540
G	800	432	1232	2460	8620	11080

79. a. Plots: Total cost Rs 10.50 crores. For purposes of simplification it has been assumed that half the total value of the plots which corresponds to the plots of the highest income groups, will be paid in cash, while the other half will be paid in 10 annual installments. In fact there will be a scale between payment in cash and payment in 10 annual installments, depending on the income of the beneficiary, his possibility to pay a down payment, etc.

b. Houses: Total cost Rs 24.15 crores. Repayment in 20 annual installments.

c. Shops and markets: Total cost Rs 3.3 crores (including cost of land and land development). Repayment in three annual installments.

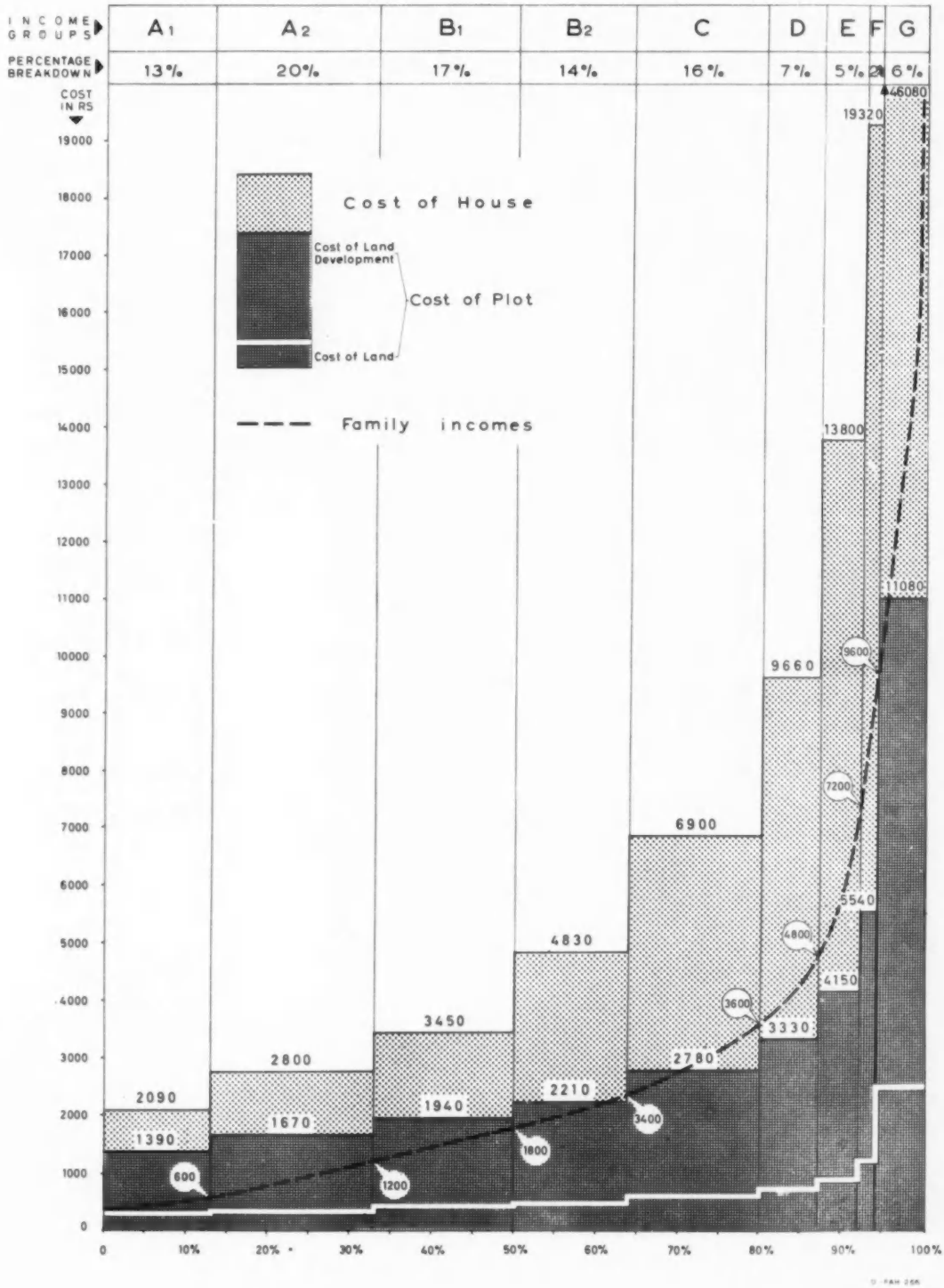
d. Buildings: Total cost Rs 22.00 crores (including cost of land and land development). It has been assumed that half will be debited to the appropriate sectors of the Development Programme and appropriate Ministries or Authorities, while the other half will be finally debited to the sector of Housing and Settlements. This assumption is very hard for this last sector. The cost of all the buildings ought to be debited to the interested Ministries or Authorities. As this however is not always practicable or causes delays and disorder preference was given to the assumption made above as more realistic.

e. Industrial area: Total cost Rs 9.00 crores (including cost of land and land development). Repayment in five annual installments.

80. By the end of the 1971-72 fiscal year, when the government's work for the development of the whole area will be completed, Rs 37.90 crores will have been repaid. Thus, out of the total cost of the government works amounting to Rs 80 crores, only Rs 42.10 crores will have to be provided by the government. Out of this latter sum Rs 20.09 crores will be repaid by the end of the 1990-91 fiscal year.

DEVELOPMENT OF THE KORANGI AREA

BREAKDOWN OF FAMILY INCOMES AND CORRESPONDING COST OF HOUSES AND PLOTS



List of Recent Publications of Interest

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The status seekers. New York, David McKey Co., 1959. 376 pp. ($4.50)
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Steinman, David R., and Sara Ruth Watson.
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Watkins, J.A.
Turf irrigation manual. Telsco Industries, 1959. 160 pp. Illust. diagrams. ($15.00).

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